SLV-SE85/SF90/SF99

RMT-V259D/V259E/V259F/V259G/V259H/V259J/V260/V260A/V260B

SERVICE MANUAL

UK Model
SLV-SE85UX/SF90UX(SF)/
SF90UX(WF)/SF99UX

French Model
SLV-SE85B/SF90B(SF)/
SF90B(WF)/SF99B

German Model
SLV-SE85VC/SF90VC(SF)/
SF90VC(WF)/SF99VC

Spanish Model
SLV-SE85NP/SF90NP(SF)/
SF90NP(WF)/SF99NP

E Model
SLV-SF99EN

Irish Model
SLV-SF90EX

SR MECHANISM

VHS

Hi-Fi

SHOWVIEW® DELUXE

Photo: SLV-SF90
RMT-V259F

Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENT Ⅵ for MECHANICAL ADJUSTMENTS (9-921-647-13).

SPECIFICATIONS

System

Channel coverage
- PAL (B/G)
- VHF E2 to E12
- VHF Italian channel A to H
- UHF E21 to E69
- CATV S01 to S05, S1 to S20
- HYPER S21 to S41

RF output signal
- UHF channels 21 to 69

Aerial out
- 75-ohm asymmetrical aerial socket

Inputs and outputs

⇄LINE-1 (TV)
- 21-pin
- Video input: pin 20
- Audio input: pins 2 and 6
- Video output: pin 19
- Audio output: pins 1 and 3

DECODER/⇥ LINE-4 IN
- 21-pin
- Video input: pin 20
- Audio input: pins 2 and 6

LINE-2 IN
- VIDEO IN, phono jack (1)
- Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
- AUDIO IN, phono jack (2)
- Input level: 327 mVrms
- Input impedance : more than 47 kilohms

LINE-3 IN
- VIDEO IN, phono jack (1)
- Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
- AUDIO IN, phono jack (2)
- Input level: 327 mVrms
- Input impedance : more than 47 kilohms

LINE-2 OUT
- VIDEO OUT, phono jack (1)
- Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
- AUDIO OUT, phono jack (2)
- Rated output level: 327 mVrms
- Load impedance: 47 kilohms
- Output impedance: less than 10 kilohms

General

Power requirements
- 220 – 240 V AC, 50 Hz

Power consumption
- 25 W (Normal)
- 3, 5 W (POWER SAVE is set to ON, no decoder)

Operating temperature
- 5°C to 40°C

Storage temperature
- –20°C to 60°C

Dimensions
- Approx. 430 × 100 × 335 mm (w/h/d) including projecting parts and controls

Mass
- Approx. 4.9 kg

Supplied accessories

Remote commander (1)
R6 (size AA) batteries (2)
Aerial cable (1)
Audio cable (1) (SF99)
EURO-AV cable (1)
SmartFile labels (5) (10. for UX)
Satellite controller (1) (SE85/SF90)

Design and specifications are subject to change without notice.

VIDEO CASSETTE RECORDER

MICROFILM

SONY®

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270˚C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

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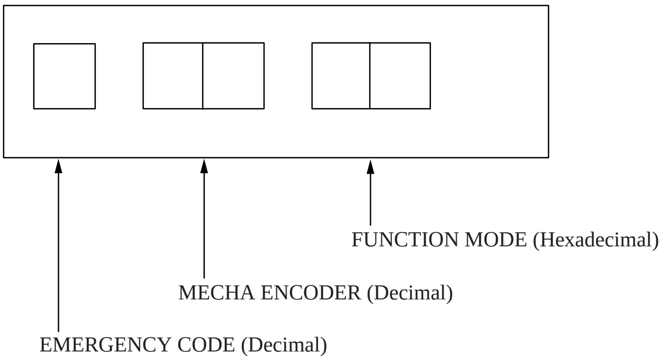
1. ERROR CODE INDICATION

- EMERGENCY CODE and ENCODER DATA and FUNCTION MODE will display to the fluorescent display tube in MECHA emergency mode.



EMERGENCY CODE

Code	Emergency contents
0	No emergency
1	Loading direction cam encoder emergency
2	Unloading direction cam encoder emergency
3	T reel rotation emergency
4	S reel rotation emergency
5	Capstan rotation emergency
6	Drum rotation emergency
7	Cam encoder emergency on initializing
8	Cassette front loading emergency

MECHA ENCODER

Code	Cam position	VTR mode
0	NC	Mode except for the following
1	EJECT	EJECT (Include Power off)
2	CDOWN	Cassette down
3	ULDEND	Tape unload end • Dew stop
4	TLOAD	In tape loading
5	HCLEAN	In tape loading
6	LDEND	Tape loading end
7	RVS	RVS JOG (Include STILL, SLOW)
8	PR	FWD, FWDP/RVS MECHA inhibit
9	FWDP	FWD SLOW, FWD STILL
10	FWDP	PB, FWD JOG • STOP (Drum on)
11	STOP	STOP (Drum off • Power off)
12	FR	FF/REW

FUNCTION MODE

Code (*1)	Code (*2)	Function mode	Code (*1)	Code (*2)	Function mode
00	80	Initial	1E	9E	REW HIGH PB
01	81	Emergency	1F	9F	REC
02	82	Emergency power off	20	A0	REC PAUSE
03	83	EJECT	21	A1	TIMER REC
04	84	EJECT DEW	22	A2	TIMER REC PAUSE
05	85	EJECT power off	23	A3	ORC
06	86	ULDEND	24	A4	VA INSERT
07	87	STOP DEW	25	A5	VA INSERT PAUSE
08	88	ULDEND power off	26	A6	V INSERT
09	89	HCLEAN	27	A7	V INSERT PAUSE
0A	8A	STOP	28	A8	A INSERT
0B	8B	STOP tape end	29	AA	A INSERT PAUSE
0C	8C	STOP tape top	2A	AA	PB
0D	8D	STOP zero	2B	AB	FWD X1
0E	8E	STOP power off	2C	AC	RVS X1
0F	8F	STNBY	2D	AD	FWD X2
10	90	STNBY tape top	2E	AE	RVS X2
11	91	STNBY zero	2F	AF	CUE
12	92	EE FWD	30	B0	REV
13	93	EE RVS	31	B1	CUE LOCK
14	94	FF	32	B2	REV LOCK
15	95	FWD SEARCH	33	B3	EDIT STNBY
16	96	FF 0 PB	34	B4	DUMMY
17	97	FF 0 STOP	35	B5	FWD STILL
18	98	REW	36	B6	RVS STILL
19	99	RVS SEARCH	37	B7	FED STEP
1A	9A	REW 0 PB	38	B8	RVS STEP
1B	9B	REW 0 STOP	39	B9	FWD SLOW
1C	9C	REW PB	3A	BA	RVS SLOW
1D	9D	REW HIGH			

*1 : After MODE INHIBIT.
*2 : MODE INHIBIT.

SECTION 1
GENERAL

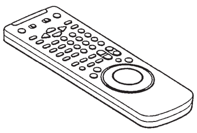
This section is extracted from instruction manual. (SLV-SF99 model)

Step 1

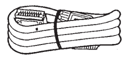
Unpacking

Check that you have received the following items with the VCR:

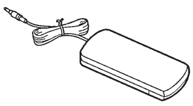
- Remote commander



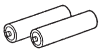
- EURO-AV cable



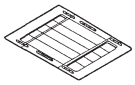
- Satellite controller



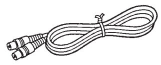
- R6 (size AA) batteries



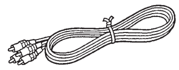
- SmartFile labels



- Aerial cable



- Audio cable



Checking your model name

The instructions in this manual are for the 2 models: SLV-SF99NP and SF99VC. Check your model number by looking at the rear panel of your VCR. The SLV-SF99VC is the model used for illustration purposes. Any difference in operation is clearly indicated in the text, for example, "SLV-SF99NP only."

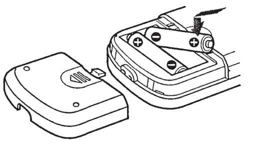
Step 2

Setting up the remote commander

Inserting the batteries

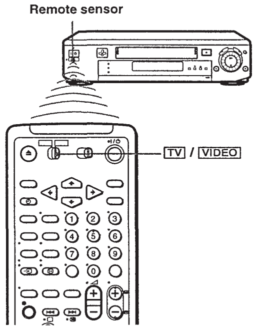
Insert two R6 (size AA) batteries by matching the + and – on the batteries to the diagram inside the battery compartment.

Insert the negative (–) end first, then push in and down until the positive (+) end clicks into position.



Using the remote commander

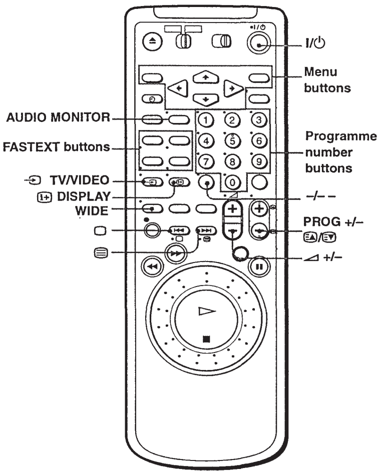
You can use this remote commander to operate this VCR and a Sony TV. Buttons on the remote commander marked with a dot (•) can be used to operate your Sony TV. If the TV does not have the ▣ symbol near the remote sensor, this remote commander will not operate the TV.



To operate	Set TV / VIDEO to
the VCR	VIDEO and point at the remote sensor on the VCR
a Sony TV	TV and point at the remote sensor on the TV

continued

Step 2 : Setting up the remote commander (continued)



TV control buttons

To	Press
Turn the TV into standby	I/⏻
Select an input source of the TV either from aerial in or from line in	⊕ TV/VIDEO
Select the programme position of the TV	Programme number buttons, –/– –, PROG +/–
Adjust the volume of the TV	⊿ +/–

To	Press
Switch to TV (Teletext off)	▢ (TV)
Switch to Teletext	⊟ (Teletext)
Select the sound	AUDIO MONITOR
Use FASTEXT	FASTEXT buttons
Call up on-screen display	[1+] DISPLAY
Change the Teletext page	Ⓐ/Ⓥ.
Operate TV menu	Menu buttons
Switch to/from wide mode of a Sony wide TV (For other manufacture's wide TV, see "Controlling other TVs with the remote commander" below.)	WIDE

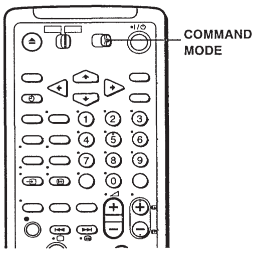
Notes

- In normal use, the batteries should last about three to six months.
- If you do not use the remote commander for an extended period of time, remove the batteries to avoid possible damage from battery leakage.
- Do not use a new battery with an old one together.
- Do not use different types of batteries together.
- Some buttons may not work with certain Sony TVs.

Setting the COMMAND MODE switch

To remote control the Sony VCR with this remote commander, set COMMAND MODE on the remote commander to the same position as the one on the VCR. Usually, it is set to VTR3. Change the position as shown below to control other Sony VCRs :

VTR1:For Sony Betamax format VCRs
VTR2 : For Sony 8mm format VCRs
VTR3 : For Sony VHS format VCRs



continued

Step 2 : Setting up the remote commander (continued)

Controlling other TVs with the remote commander

The remote commander is preprogrammed to control non-Sony TVs. If your TV is listed in the table below, set the appropriate manufacturer's code number.

1 Set TV/VIDEO at the top of the remote commander to TV.

2 Hold down **I/⏻**, and enter your TV's code number(s) using the programme number buttons.Then release **I/⏻**.

Now you can use the following TV control buttons to control your TV:

I/⏻, TV/VIDEO, programme number buttons, -/-- (ten's digit), PROG +/–, ⊿ +/–, ▭ (TV), ⊜ (Teletext), FASTEXT buttons, WIDE*, MENU*, CURSOR ↑*/↓*/←*/→*, and OK*.

* These buttons may not work with all TVs.

Tip

- When you set your TV's code number correctly while the TV is turned on, the TV turns off automatically.

Code numbers of controllable TVs

If more than one code number is listed, try entering them one at a time until you find the one that works with your TV.

To make wide mode settings, see the footnotes below this table for the applicable code numbers.

Manufacturer	Code number
Sony	01[*1], 02, 03, 04, 05
Aiwa	32
Akai	68
Blaupunkt	10, 21
Brionvega	40
C.G.M	09
Colonad	03
Dual	44
Emerson	03, 04
Fenner	30, 31
Ferguson	52
Goldstar	03, 04, 17
Grundig	10[*1], 11[*1]
Hitachi	24
Hyper	31
Inno-Hit	41
Irradio	20
ITT	15, 16, 69[*3]
JVC	33
Loewe	45
Mitsubishi	27[*1], 28[*1], 50[*1], 51[*1]
Mivar	09

Manufacturer	Code number
NEC	66
Nokia	15, 16, 69[*3]
Nordmende	35, 42
Orion	47, 48
Panasonic	17[*1], 49
Philips	06[*1], 07[*1], 08[*1]
Phonola	18, 19
Pioneer	26
Saba	12, 13
Samsung	22, 23
Sanyo	25
Schneider	46
Seleco	14
Sharp	29
Siemens	39
Sinudyne	37
TEAC	67
Telefunken	36
Thomson	43[*2]
Toshiba	38
White Westinghouse	34

[*1] Press WIDE to switch the wide picture modes.

[*2] Press WIDE, then press ⊿ +/– to select the wide picture mode you want.

[*3] Press WIDE. The menu appears on the TV screen.Then, press CURSOR ↑/↓/←/→ to select the wide picture you want and press OK.

continued

Step 2 : Setting up the remote commander (continued)

Notes

- If the TV uses a different remote control system from the one programmed to work with the VCR, you cannot control your TV with the remote commander.
- If you enter a new code number, the code number previously entered will be erased.
- If you remove the batteries of the remote commander for more than a few minutes, the code number may be reset to 01 (Sony). In this case, reset the appropriate code number.

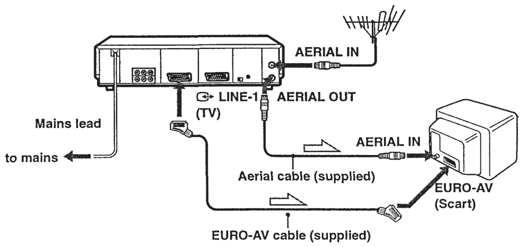
Step 3

Connecting the VCR

- If your TV has a EURO-AV connector, see below.
- If your TV does not have a EURO-AV connector, see page 14.

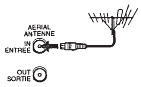
In any case, if you connect a satellite tuner, see page 15

If your TV has a EURO-AV (Scart) connector

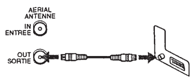


⇨ : Signal flow

1 Disconnect the aerial cable from your TV and connect it to AERIAL IN on the rear panel of the VCR.



2 Connect AERIAL OUT of the VCR and the aerial input of your TV using the supplied aerial cable.

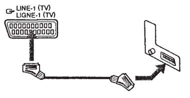


continued

Step 3 : Connecting the VCR (continued)

3 Connect LINE-1 (TV) on the VCR and the EURO-AV (Scart) connector on the TV with the supplied EURO-AV cable.

This connection improves picture and sound quality. Whenever you want to watch the VCR picture, press ⊸ TV/VIDEO to display the VIDEO indicator in the display window. If your TV does not have a EURO-AV scart connector, see page 14.



4 Connect the mains lead to the mains.

Note

- If the TV is connected to the LINE-1 (TV) connector, setting the RF MODULATOR in the OTHER OPTIONS menu to OFF is recommended (initial setting). In the OFF position, only the signal from the aerial is output through the AERIAL OUT connector (see page 75). You do not have to tune your TV to the VCR. Skip "Tuning your TV to the VCR" on page 17.

About the SMARTLINK features

If the connected TV complies with SMARTLINK, NexTView Link, MEGALOGIC[*1], EASYLINK[*2], Q-Link[*3], or EURO VIEW LINK[*4], you can use the SMARTLINK function after you complete the steps on the previous page (the SMARTLINK indicator appears in the VCR's display window when you turn on the TV). You can enjoy the following SMARTLINK features.

- Preset Download
  You can download your TV tuner preset data to this VCR and tune the VCR according to that data in Auto Set Up. This greatly simplifies the Auto Set Up procedure. Be careful, not to disconnect the cables or exit the Auto Set Up function during the procedure.
  See "Setting up the VCR with the Auto Set Up function" on page 19.
- TV Direct Rec
  You can easily record what you are watching on the TV (other than tapes being played on this VCR). For details, see "Recording what you are watching on the TV (TV Direct Rec)" on page 55.
- One Touch Play
  With One Touch Play, you can start playback automatically without turning on the TV. For details, see "Starting playback automatically with one button (One Touch Play)" on page 51.
- One Touch Menu
  You can turn on the VCR and TV, set the TV to the video channel, and display the VCR's on-screen display automatically by pressing MENU on the remote commander.
- One Touch Timer
  You can turn on the VCR and TV, set the TV to the video channel, and display the timer recording menu (the TIMER METHOD menu, the TIMER menu, or the SHOWVIEW menu) automatically by pressing ⏻ TIMER on the remote commander. You can set which timer recording menu is displayed using TIMER OPTIONS in the OTHER OPTIONS menu (see page 77).
- Automatic Power off
  You can have the VCR turn off automatically, if the VCR is not used for about 1 minute, after you turn off the TV.
- NexTView Download
  You can easily set the timer recording by using the NexTView Download function of your TV. Please, refer to your TV's instruction manual.

[*1] "MEGALOGIC" is a registered trademark of Grundig Corporation.
[*2] "EASYLINK" is a trademark of Philips Corporation.
[*3] "Q-Link" is a trademark of Panasonic Corporation.
[*4] "EURO VIEW LINK" is a trademark of Toshiba Corporation.

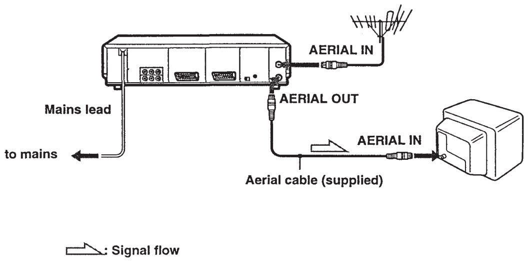
Note

- Not all the TVs respond to the functions above.

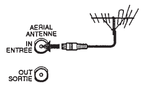
continued

Step 3 : Connecting the VCR (continued)

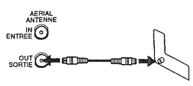
If your TV does not have a EURO-AV (Scart) connector



1 Disconnect the aerial cable from your TV and connect it to AERIAL IN on the rear panel of the VCR.



2 Connect AERIAL OUT of the VCR and the aerial input of your TV using the supplied aerial cable.



3 Connect the mains lead to the mains.

Note

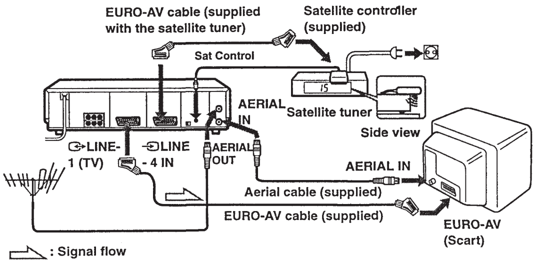
- When you connect the VCR and your TV only with an aerial cable, you have to set RF MODULATOR in the OTHER OPTIONS menu to ON (see page 75).

Connecting the satellite tuner

If you don't use a satellite tuner, skip to page 17.

If your satellite tuner has a EURO-AV (scart) connector

The illustration below shows an example of connecting the satellite tuner to the LINE-4 IN. In this case, set the SAT. CONNECTION setting to the LINE-4 (see page 27).



You can watch programmes from the satellite tuner connected to this VCR on the TV even when the VCR is turned off using the Line Through function. When you turn on the satellite tuner, this VCR automatically sends the signal from the satellite tuner to the TV without turning itself on.

1 Set DECODER/LINE-4 to LINE-4 in the OTHER OPTIONS menu.

2 Set POWER SAVE to OFF in the OTHER OPTIONS menu.

3 Turn off the VCR.

To watch a satellite programme, turn on the satellite tuner and the TV.

For details, see page 27.

Note

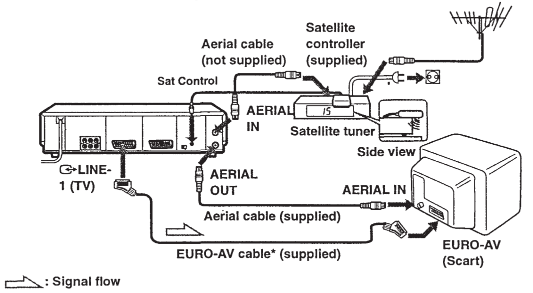
- You cannot watch satellite programmes on the TV while recording unless you record a satellite programme.

continued

Step 3 : Connecting the VCR (continued)

If your satellite tuner does not have a EURO-AV (scart) connector

Set the SAT. CONNECTION setting to RF (see page 27).

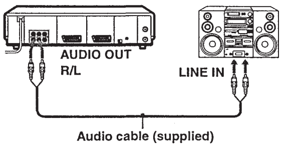


* If your TV doesn't have a EURO-AV (Scart) connector, the EURO-AV cable connected to the VCR is not required.

Additional connections

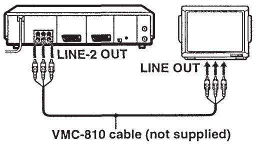
To a stereo system.

You can improve sound quality by connecting a stereo system to the AUDIO OUT R/L jacks as shown on the right.



To a TV that has phono type audio/ video input jacks(only if you don't connect the VCR and your TV using a EURO-AV connector)

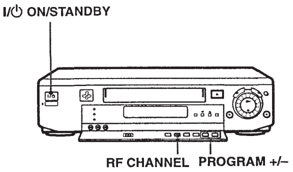
This additional connection improves picture and sound quality. Connect the TV as shown on the right using a commercially available connecting cable like the Sony VMC-810. If your TV has only one audio input jack, use a connecting cable like the Sony VMC-910MS.



Step 4

Tuning your TV to the VCR

If you have connected the VCR to your TV using the EURO-AV cable, skip this step.



1 ON/STANDBY I/⏻

Press I/⏻ ON/STANDBY to turn on the VCR.

Pull down the drop down panel.

2 RF CHANNEL

Press briefly RF CHANNEL on the VCR.

The factory-preset RF channel appears in the display window.

The VCR signal is output through this channel to the TV.

RF 32

3 Turn on your TV and select a programme position for the VCR picture.

This programme position will now be referred to as the video channel.

continued

Step 4 : Tuning your TV to the VCR (continued)

4 Tune the TV to the same channel as the one shown in the display window so that the picture on the right appears clearly on the TV screen.

Refer to your TV manual for tuning instructions.

If the picture does not appear clearly, see "To obtain a clear picture from the VCR" below.

SONY VIDEO CASSETTE RECORDER

5 RF CHANNEL

Press RF CHANNEL.

You have now tuned your TV to the VCR. From now on, whenever you want to play a tape, set the TV to the video channel.

To check if the TV tuning is correct

Set the TV to the video channel and press PROGRAM +/– on the VCR. If the TV screen changes to a different programme each time you press PROGRAM +/–, the TV tuning is correct.

To obtain a clear picture from the VCR

If the screen does not appear clearly in step 4 above, press PROGRAM +/–, so that another RF channel appears.Then tune the TV to the new RF channel until a clear picture appears.

Note

- When you connect the VCR and your TV only with an aerial cable, you have to set RF MODULATOR in the OTHER OPTIONS menu to ON (see page 75).

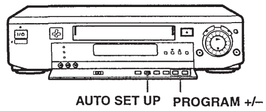
Step 5

Setting up the VCR with the Auto Set Up function

Before using the VCR for the first time, set up the VCR using the Auto Set Up function.With this function, you can set the language for the on-screen display, TV channels, guide channels for the ShowView system, and VCR clock automatically.

Before you start ...

- Turn on the satellite tuner if it is connected to the VCR only by the aerial cable and not to the EURO-AV cable.



1 AUTO SET UP

Hold down AUTO SET UP on the VCR for more than 3 seconds.

The VCR automatically turns on, and the country abbreviation appears in the display window.

ELSE

2 - PROGRAM + TRACKING

Press PROGRAM +/– to highlight the abbreviation of your country.

For some countries, there is a selection of languages to choose from.

The abbreviations of the countries and languages are as follows :

continued

Step 5 : Setting up the VCR with the Auto Set Up function (continued)

Abbreviation	Country	Language
A	Austria	German
B-D	Belgium	German
B-F	Belgium	French
B-N	Belgium	Dutch
CH-D	Switzerland	German
CH-F	Switzerland	French
CH-I	Switzerland	Italian
D	Germany	German
DK	Denmark	English
E	Spain	Spanish

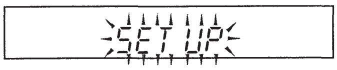
Abbreviation	Country	Language
I	Italy	Italian
L-D	Luxemburg	German
L-F	Luxemburg	French
N	Norway	English
NL	Netherlands	Dutch
P	Portugal	Portuguese
S	Sweden	English
SF	Finland	English
ELSE	Other countries	English

If your country does not appear in the list , select ELSE.

3 AUTO SET UP

Press AUTO SET UP.

The VCR starts searching for all of the receivable channels and presets them in the appropriate order for your local area.



If you use the SMARTLINK connection, the Preset Download function starts and the SMARTLINK indicator flashes in the display window during download.

After the search or download is complete, the current time appears in the display window for any stations that transmit a time signal.

To cancel the Auto Set Up function

Press AUTO SET UP.

Tip

- If you want to change the language for the on-screen display from the one preset in the Auto Set Up function, see page 34.

Notes

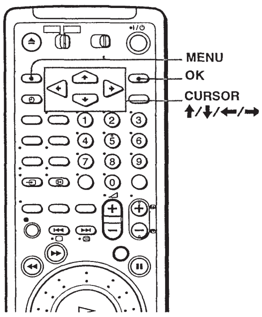
- Do not cancel the Auto Set Up function during step 3. If you do, repeat Auto Set Up from the beginning.
- Sometimes, when you operate the Auto Set Up function, some of the settings (ShowView, timer etc...) will be reset. In this case, you have to set them again.

Step 6

Setting the clock

You must set the time and date on the VCR to use the timer recording features properly.

The Auto Clock Set function works only if a station in your area is broadcasting a time signal. If the Auto Set Up function did not set the clock correctly for your local area, try another station for the Auto Clock Set function.



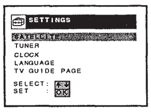
Setting the clock manually

Before you start...

- Turn on the VCR and the TV.
- Set the TV to the video channel.

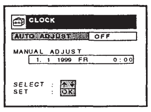
1 MENU CURSOR OK

Press MENU, then press CURSOR ↑/↓ to highlight SETTINGS and press OK.


SETTINGS
SATELLITE
TUNER
CLOCK
LANGUAGE
TV GUIDE PAGE
SELECT : ↑↓
SET : OK

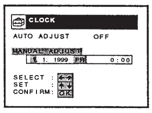
2 CURSOR OK

Press CURSOR ↑/↓ to highlight CLOCK, then press OK.


CLOCK
AUTO ADJUST OFF
MANUAL ADJUST
1. 1 1999 FR 0:00
SELECT : ↑↓
SET : OK

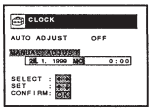
3 CURSOR OK

Press CURSOR ↑/↓ to highlight MANUAL ADJUST, then press OK.


CLOCK
AUTO ADJUST OFF
MANUAL ADJUST
1. 1. 1999 FR 0:00
SELECT : ←→
SET : ↑↓
CONFIRM : OK

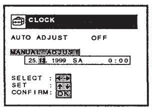
4 CURSOR

Press CURSOR ↑/↓ to set the date.


CLOCK
AUTO ADJUST OFF
MANUAL ADJUST
25. 1. 1999 MO 0:00
SELECT : ←→
SET : ↑↓
CONFIRM : OK

5 CURSOR

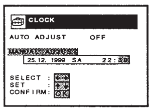
Press CURSOR → to highlight the month and set the month pressing CURSOR ↑/↓.


CLOCK
AUTO ADJUST OFF
MANUAL ADJUST
25. 12. 1999 SA 0:00
SELECT : ←→
SET : ↑↓
CONFIRM : OK

6 CURSOR

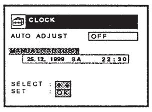
Set the year, hour, and minutes in sequence, pressing CURSOR → to highlight the item to be set, and press CURSOR ↑/↓ to select the digits.

The day of the week is set automatically.


CLOCK
AUTO ADJUST OFF
MANUAL ADJUST
25. 12. 1999 SA 22:30
SELECT : ←→
SET : ↑↓
CONFIRM : OK

7 OK

Press OK to confirm the setting and start the clock.


CLOCK
AUTO ADJUST OFF
MANUAL ADJUST
25. 12. 1999 SA 22:30
SELECT : ↑↓
SET : OK

continued

Step 6 : Setting the clock (continued)

8

Press MENU to exit the menu.

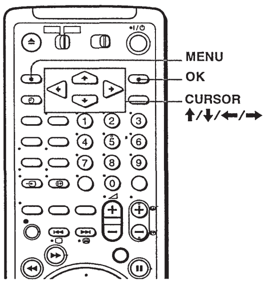
Tip

- To change the digits during setting, press CURSOR ← to return to the item to be changed, and select the digits pressing CURSOR ↑/↓.

Note

- The menu disappears automatically if you don't proceed for more than a few minutes.

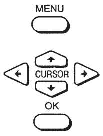
Changing the station for the Auto Clock Set function


MENU
OK
CURSOR
↑/↓/←/→

Before you start…

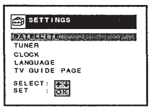
- Turn on the VCR and the TV.
- Set the TV to the video channel.

1

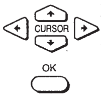

MENU
CURSOR
OK

Press MENU, then press CURSOR ↑/↓ to highlight SETTINGS and press OK.

When using the Auto Set Up procedure, skip this step

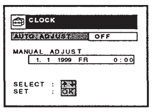

SETTINGS
SATELLITE
TUNER
CLOCK
LANGUAGE
TV GUIDE PAGE
SELECT : ↑↓
SET : OK

2



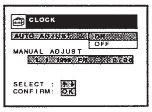
Press CURSOR ↑/↓ to highlight CLOCK, then press OK.

AUTO ADJUST is highlighted.


CLOCK
AUTO ADJUST
OFF
MANUAL ADJUST
1. 1 1999 FR 0:00
SELECT : ↑↓
SET : OK

3

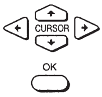
Press OK.


CLOCK
AUTO ADJUST
ON
OFF
MANUAL ADJUST
1. 1. 1999 FR 0:00
SELECT : ↑↓
CONFIRM : OK

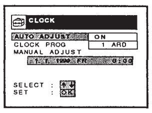
continued

Step 6 : Setting the clock (continued)

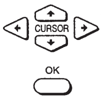
4



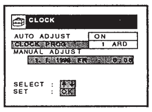
Press CURSOR ↑/↓ to highlight ON, then press OK.


CLOCK
AUTO ADJUST
ON
CLOCK PROG
1 ARD
MANUAL ADJUST
1. 1. 1999 FR 0:00
SELECT : ↑↓
SET : OK

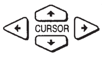
5



Press CURSOR ↓ to highlight CLOCK PROG, then press OK.

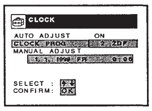

CLOCK
AUTO ADJUST
ON
CLOCK PROG
1 ARD
MANUAL ADJUST
1. 1. 1999 FR 0:00
SELECT : ↑↓
SET : OK

6



Press CURSOR ↑/↓ repeatedly until the programme position of the station that carries the time signal appears.

If the VCR does not receive the time signal from any station, AUTO ADJUST returns to OFF automatically.


CLOCK
AUTO ADJUST ON
CLOCK PROG
2 ZDF
MANUAL ADJUST
1. 1. 1999 FR 0:00
SELECT : ↑↓
CONFIRM : OK

7

Press MENU to exit the menu.

Tips

- To change the digits during setting, press CURSOR ← to return to the item to be changed, and select the digits using CURSOR ↑/↓.
- If you set AUTO ADJUST to ON, the Auto Clock Set function is activated whenever the VCR is turned off. The time is adjusted automatically by making reference to the time signal from the station whose programme position is displayed in the "CLOCK PROG" row. If you do not need the Auto Clock Set, select OFF.

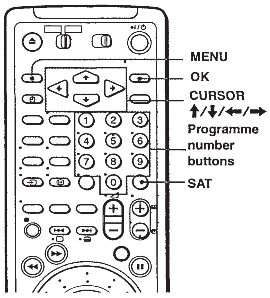
Note

- The menu disappears automatically if you don't proceed for more than a few minutes.

Step 7

Setting the satellite tuner

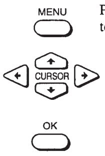
If you do not connect a satellite tuner, skip this step.


MENU
OK
CURSOR
↑/↓/←/→
Programme number buttons
SAT

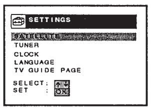
Before you start…

- Turn on the VCR and the TV.
- Set the TV to the video channel.
- Remove the protection sticker of the satellite controller and lean it on the top of the satellite tuner, near the infrared receptor, so that it hangs out over the satellite tuner front (see page 15).

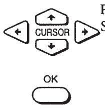
1


MENU
CURSOR
OK

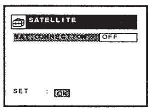
Press MENU, then press CURSOR ↑/↓ to highlight SETTINGS and press OK.


SETTINGS
SATELLITE
TUNER
CLOCK
LANGUAGE
TV GUIDE PAGE
SELECT : ↑↓
SET : OK

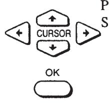
2



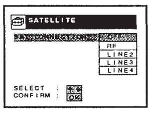
Press CURSOR ↑/↓ to highlight SATELLITE, then press OK.


SATELLITE
SAT. CONNECTION
OFF
SET : OK

3



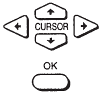
Press CURSOR ↑/↓/←/→ to highlight SAT. CONNECTION and press OK.


SATELLITE
SAT. CONNECTION
OFF
RF
LINE2
LINE3
LINE4
SELECT : ↑↓
CONFIRM : OK

continued

Step 7 : Setting the satellite tuner (continued)

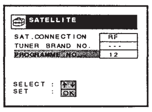
4



- If you connect the satellite tuner using the aerial cable :

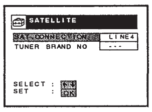
  Press CURSOR ↑/↓/←/→ to select RF and press OK.

  Press CURSOR ↑/↓/←/→ to highlight PROGRAMME NO. and press OK. Enter the appropriate number using CURSOR ↑/↓ and press OK.

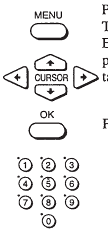


- If you connect the satellite tuner using the EURO-AV cable :

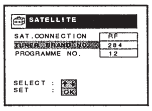
  Press CURSOR ↑/↓/←/→ to select LINE-4 and press OK.



5



Press CURSOR ↑/↓/←/→ to highlight TUNER BRAND NO. and press OK. Enter the appropriate number using the programme number buttons. Refer to the table on the next page. Press OK.



Press MENU to exit the menu.

Notes

- If your VCR is connected to the satellite tuner by the aerial cable, enter the programme number of the VCR corresponding to the channel where you have set up the satellite tuner output.
- If you connect the satellite tuner to the LINE input, turn on the VCR and select the appropriate LINE input in step 4 to watch a satellite programme.
- It is recommended to connect your satellite tuner to the LINE-4 connector.
- For some satellite tuner, in order to avoid any conflict between the satellite controller and the VCR remote commander, be careful not to point the remote commander to the satellite tuner and the VCR at the same time.

Satellite tuner brand number

To control the satellite tuner, enter the appropriate number corresponding to your satellite tuner brand.

Some satellite tuners may not operate at all with this VCR.

Satellite tuner brand	Code numbers
ABC	025, 028
ABsat	843
Akai	526
Alba	102, 265, 373, 385, 432, 466, 526, 624
Aldes	299
Allantide	344
Amstrad	091, 224, 263, 349, 356, 472, 512, 520, 686, 700, 822
Andover	555
Ankaro	228, 231, 299, 380, 530
Anttron	194, 432
Arcon	283, 379
Armstrong	254
Asat	384
AST	332, 361, 362
Astra	119, 384, 387, 529, 550
Astro	184, 369, 512, 514, 531, 595
Audio Ton	375
Avalon	407
Axis	377, 380, 541
Birgimingham Cable Communications	287
British Telecom	116
Barcom	228
Beko	200
Best	228, 380

Satellite tuner brand	Code numbers
Blaupunkt	184
Boca	254, 524, 840
Brain Wave	343
Brunor	420
Bush	078, 102, 265
BT	526, 679, 721
Cabletime	172, 282, 388, 459
Cambridge	267, 355, 526
Camundosat	104
Canal+	864
Canal Satellite	864
Channel Master	373
Chaparral	227
CityCom	405, 829
Clark	822
Clyde	097
CNT	531
Commlink	299
Comtec	277
Connexions	104, 179, 407, 469
Conrad	618
Contec	377
Cryptovision	511
Crown	254

continued

Step 7 : Setting the satellite tuner (continued)

Satellite tuner brand	Code numbers
Cyrus	211
Daewoo	384
D-box	734
DDC	373
Decsat	434
Diskxpress	179, 228
DNT	211, 407, 469
Drake	279, 470
Dynasat	690
Echostar	181, 229, 291, 407, 465, 724, 882
EIF	428, 685
Elta	375, 385
Emanon	432
Emma Esse	708
Engel	461
Eurodec	535, 537
Europa	387, 708
Fenner	728
Ferguson	078, 194, 200, 347, 625, 722
Fidelity	263, 822
Filmnet	454
Finlux	119, 355, 408, 425, 466, 525
Fraba Sat	596
Fracarro	882
France Telecom	462
Freecom	346, 432, 745
FTE	2777, 342, 422, 822
Fuba	183, 228, 238, 308, 309, 380, 407, 425, 428, 432, 452, 720

Satellite tuner brand	Code numbers
Galaxis	299, 375,667, 824, 844, 845, 874
Galaxisat	332
GEC	097
General Instrument	372
Goldsatr	346
Gooding	582
Goodmans	112, 200
Grothusen	346
Grundig	339, 474, 582, 761, 816, 540, 184, 200
G-Sat	194
Harting und Helling	344
High Performance	188
Hinari	194
Hirschmann	184, 298, 344, 408, 409, 506, 512, 513, 584, 592, 683, 732
Hitachi	466, 615
Houston	679
Huth	231, 254, 299, 357, 375, 528, 600, 805
HyperVision	630
Imperial	265, 496
InVidio	882
Intervision	603
IRTE	620
ITS	632
ITT	119, 183
Jerrold	014, 025, 287, 372
Johansson	343
JOK	721
JSR	375

Satellite tuner brand	Code numbers
JVC	526, 582
Kathrein	103, 184, 211, 342, 369, 405, 453, 491, 515, 564, 592, 633, 636, 669
Key West	805
Kosmos	342, 346
Kreiselmeyer	184
Kyostar	432
La Sat	435, 475, 524, 531, 618
Lasat	833
Lenco	346, 384, 422, 432, 461
Lennox	603
Lion	364
Lupus	380
Luxor	119, 183, 584, 615
Macab	535, 597
Magnavox	043
Manhattan	466, 531, 603
Maranz	211
Maspro	103, 339, 347, 506, 761
Matsui	355, 582
MediaSat	864
Mediamarkt	254
Memphis	377
Micro Technology	344, 550
Mimtec	237
Minerva	582
Mintec	589
M.N.E.T	454

Satellite tuner brand	Code numbers
MNet	454
Mnet	030
Morgan's	254, 359, 524, 840
Multistar	342, 475
Muratto	346
Navex	343
NEC	189
Neuhaus	512
Neusat	703
Newhaus	231
Next-Wave	743
Nikko	371, 724
Nimbus	237
Nokia	692, 119, 183, 339, 408, 466, 584, 615, 734, 832, 884
Nordmende	393, 625
Oceanic	597
Orbitec	512, 596
Oxford	355
Pace	078, 194, 339, 347, 450, 466, 508, 802, 806
Pal	848
Palcom	238, 308, 309, 452
Palladium	582
Palsat	512
Paltec	238
Panasonic	225
Panda	466
Philips	630, 211, 303, 339, 466, 474, 582, 678, 721, 761, 816, 864

continued

Step 7 : Setting the satellite tuner (continued)

Satellite tuner brand	Code numbers
Phoenix	112, 377
Phonotrend	299, 603, 799
Pioneer	155, 271, 544
Planet	882
Polytron	405
Prima	419
Primestar	372
ProVision	595
Promax	466
Prosat	299, 496
PVP Stereo Visual Matrix	014
Pyxis	842
Quadral	373, 530, 639
Radiola	211
Radix	407, 893
RE	237
Revox	237
RFT	211, 231, 299, 552
Saba	265, 347, 364, 531, 551, 586, 701, 720, 745
Sabre	466
Sagem	831
Sakura	112, 377
Salora	393, 119, 183, 210, 615
Samsung	283, 298, 574
SAT	332, 361, 362, 419, 472
Satbox	386
Satcom	224, 357, 616
Satec	194, 339

Satellite tuner brand	Code numbers
Satmaster	283, 357
SatPartner	343, 346, 432, 513, 531, 720, 745, 822
Satpartner	703
Schneider	816
Schwaiger	194, 405, 515
Scientific Atlanta	019, 028, 288
Seemann	407, 541, 589, 637
SEG	380, 385, 432, 529, 550, 753
Siemens	184
Skymaster	299, 530, 616, 639, 724
Sony	286, 650, 715
Stella	104
Strong	179
STVI	428
STS	167
Sunstar	524, 805
Tandberg	742
Tandy	188
Tantec	308, 309, 347, 466
Tatung	156
TechniSat	272, 273, 331, 420, 469, 512, 552, 559, 596
Techniland	357
Teco	384
Tele+1	454
Telecom	104
Telefunken	432
Teleka	254, 624, 683
Telemax	435

Satellite tuner brand	Code numbers
Telesat	616
Teleservice	292
Televes	596
Tensai	632
Thomson	466, 864
Thorens	597
Tonna	357, 679
TPS	831
Triad	332, 344, 346, 361, 362
Triasat	425, 512
Tristar	277
Tudi	297
Uniden	162, 205, 803, 842
Unisat	377
United Cable	014
Unitor	228, 343
Universum	184, 525, 582
Vector	344, 364, 529
Ventana	211
Videoway	261

Satellite tuner brand	Code numbers
VisiCable+	492
Vortec	432
VTec	473, 771
Vtec	362, 701
Westminster	116
Wevasat	344
Winersat	343
Wisi	184, 332, 362, 383, 407, 417, 418, 426, 466, 551, 647, 649, 701
Wolsey	188
Wolsey Gene	555
XSat	900
Xcom Multimedia	900
Zehnder	332, 342, 437, 531, 829
Zenith	011, 536
Zwergnase	805

Note

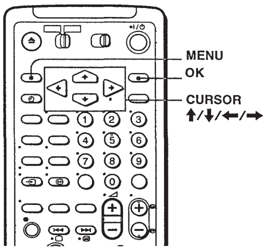
- To check if the brand number is entered correctly or not, press SAT repeatedly to display "SAT" in the display window then any number button. If the satellite tuner responds, you have enterred the correct brand number.

Selecting a language

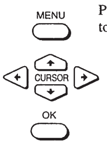
You can change the on-screen display language from the one you selected with the Auto Set Up function.

Before you start...

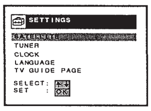
- Turn on the VCR and the TV.
- Set the TV to the video channel.


MENU
OK
CURSOR
↑/↓/←/→

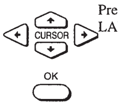
1


MENU
CURSOR
OK

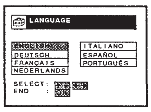
Press MENU, then press CURSOR ↑/↓ to highlight SETTINGS and press OK.


SETTINGS
SATELLITE
TUNER
CLOCK
LANGUAGE
TV GUIDE PAGE
SELECT:
SET :
OK

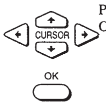
2



Press CURSOR ↑/↓ to highlight LANGUAGE, then press OK.


LANGUAGE
ENGLISH
DEUTSCH
FRANÇAIS
NEDERLANDS
ITALIANO
ESPAÑOL
PORTUGUÊS
SELECT:
END :
OK

3



Press CURSOR ↑/↓/←/→ to highlight the desired language then press OK.

Note

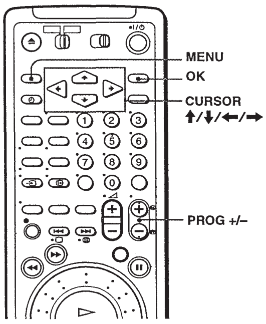
- The menu disappears automatically if you don't proceed for more than a few minutes.

Presetting channels

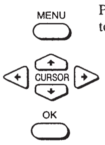
If some channels could not be preset using the Auto Set Up function, you can preset them manually.

Before you start...

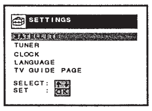
- Turn on the VCR and the TV.
- Set the TV to the video channel.


MENU
OK
CURSOR
↑/↓/←/→
PROG +/–

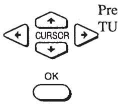
1


MENU
CURSOR
OK

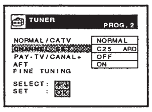
Press MENU, then press CURSOR ↑/↓ to highlight SETTINGS and press OK.


SETTINGS
SATELLITE
TUNER
CLOCK
LANGUAGE
TV GUIDE PAGE
SELECT:
SET :
OK

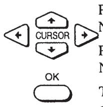
2



Press CURSOR ↑/↓ to highlight TUNER, then press OK.


TUNER
PROG. 2
NORMAL / CATV
CHANNEL SET
PAY-TV / CANAL+
AFT
FINE TUNING
NORMAL
C25 ARD
OFF
ON
SELECT:
SET :
OK

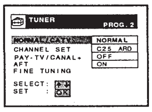
3



Press CURSOR ↑/↓ to highlight NORMAL/CATV, then press OK.

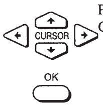
Press CURSOR ↑/↓ to highlight NORMAL, then press OK

To preset CATV (Cable Television) channels, select CATV.

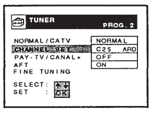

TUNER
PROG. 2
NORMAL / CATV
CHANNEL SET
PAY-TV / CANAL+
AFT
FINE TUNING
NORMAL
C25 ARD
OFF
ON
SELECT:
SET :
OK

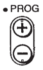
continued

Presetting channels (continued)

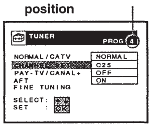
4 

Press CURSOR ↑/↓ to highlight CHANNEL SET.

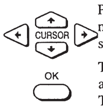

TUNER
PROG. 2
NORMAL / CATV
CHANNEL SET
PAY - TV / CANAL +
AFT
FINE TUNING
NORMAL
C25 ARD
OFF
ON
SELECT :
SET :
OK

5 

Press PROG +/– to select the programme position.


TUNER
PROG 4
NORMAL / CATV
CHANNEL SET
PAY - TV / CANAL +
AFT
FINE TUNING
NORMAL
C25
OFF
ON
SELECT :
SET :
OK

Selected programme position

6 

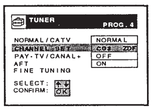
Press OK to highlight the channel number row, then press CURSOR ↑/↓ to start tuning.

The VCR starts searching for a channel and displays the first one it finds on the TV screen. Press CURSOR ↑/↓ repeatedly until the channel you want is displayed.

The channels are scanned in the following order:

- VHF E2 - E12
- VHF Italian channel A - H
- UHF E21 - E69
- CATV S1 - S20
- HYPER S21 - S41
- CATV S01 - S05

If you know the number of the channel you want, press the programme number buttons. For example, for channel 05, first press "0" and then press "5."


TUNER
PROG. 4
NORMAL / CATV
CHANNEL SET
PAY - TV / CANAL +
AFT
FINE TUNING
NORMAL
C03 ZDF
OFF
ON
SELECT :
CONFIRM :
OK

7

Press OK.

8 To allocate another channel to another programme position, repeat steps 4 to 6.

9

Press MENU to exit the menu.

Disabling unwanted programme positions

After tuning the TV channels, you can disable unused programme positions. The disabled positions will be skipped later when you press the PROG +/– buttons. You can also disable unwanted programme positions using the CHANNEL LIST menu (see page 40).

1 In step 6 above, press programme number button "0" twice to display the number "00" beside CHANNEL SET.

2 Press OK to confirm the setting, then MENU to exit the menu.

If the picture is not clear

Normally, the Auto Fine Tuning (AFT) function automatically tunes in channels clearly. If, however the picture is not clear, you may also use the manual tuning function.

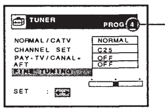
1 Press PROG +/– or the programme number buttons to select the programme position for which you cannot obtain a clear picture.

2 Press MENU, then select SETTINGS and press OK.

3 Select TUNER, then press OK.

4 Select FINE TUNING.

The fine tuning meter appears.


TUNER
PROG 4
NORMAL / CATV
CHANNEL SET
PAY - TV / CANAL +
AFT
FINE TUNING
NORMAL
C25
OFF
OFF
SET :

Selected programme position

5 Press CURSOR ←/→ to get a clearer picture, then press MENU to exit the menu.

Note that the AFT (Auto Fine Tuning) setting switches to OFF.

Note

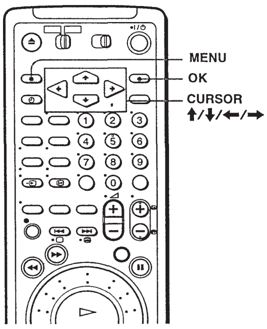
- The menu disappears automatically if you don't proceed for more than a few minutes.

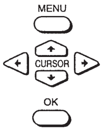
Setting/changing the station names

You can also set and change station names as you like. The set station names are displayed on the TV screen when you press the programme position on the VCR. You can change the station names (up to 5 characters).

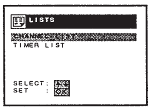
Before you start...

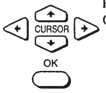
- Turn on the VCR and the TV.
- Set the TV to the video channel.


MENU
OK
CURSOR
↑/↓/←/→

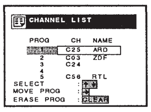
1 
MENU
CURSOR
OK

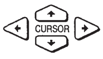
Press MENU, then press CURSOR ↑/↓ to highlight LISTS and press OK.


LISTS
CHANNEL LIST
TIMER LIST
SELECT :
SET :
OK

2 

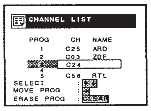
Press CURSOR ↑/↓ to highlight CHANNEL LIST, then press OK.

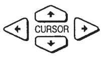

CHANNEL LIST
PROG CH NAME
1 C25 ARD
2 C03 ZDF
3 C24
4
5 C56 RTL
SELECT :
MOVE PROG :
ERASE PROG :
CLEAR

3 

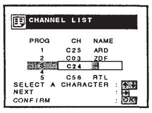
Press CURSOR ↑/↓ to highlight the row on which you want to set or change the station name.

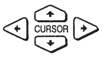
To display other pages for programme positions 6 to 60, press CURSOR ↑/↓ repeatedly.


CHANNEL LIST
PROG CH NAME
1 C25 ARD
2 C03 ZDF
3 C24
4
5 C56 RTL
SELECT :
MOVE PROG :
ERASE PROG :
CLEAR

4 

- If you want to set the station name, press CURSOR → twice to highlight the station name column only.
- If you don't want to set the station name, go to step 7.


CHANNEL LIST
PROG CH NAME
1 C25 ARD
2 C03 ZDF
3 C24
4
5 C56 RTL
SELECT A CHARACTER :
NEXT :
CONFIRM :
OK

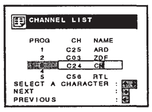
5 

Enter the station name.

1 Press CURSOR ↑/↓ to select a character.
Each time you press CURSOR ↑, the character changes as shown below.
A→ B→ ... → Z → a → b →...
→ z → 0 → 1 → ... → 9 →
(symbols) →(blank space) → A

2 Press CURSOR→ to set the next character.
The next space is highlighted.
To correct a character, press CURSOR ← until the character you want to correct is highlighted, then reset it.

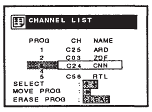
You can set up to 5 characters for the station name.


CHANNEL LIST
PROG CH NAME
1 C25 ARD
2 C03 ZDF
3 C24 CN
4
5 C56 RTL
SELECT A CHARACTER :
NEXT :
PREVIOUS :

6 To change or to set the station name of another station, repeat steps 2 to 4.

7

Press OK to confirm the setting.


CHANNEL LIST
PROG CH NAME
1 C25 ARD
2 C03 ZDF
3 C24 CNN
4
5 C56 RTL
SELECT :
MOVE PROG :
ERASE PROG :
CLEAR

8

Press MENU to exit the menu.

Note

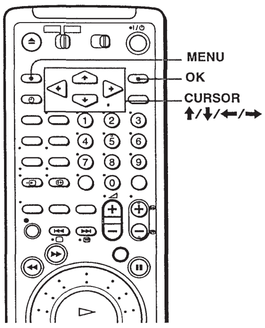
- The menu disappears automatically if you don't proceed for more than a few minutes.

Changing/disabling programme positions

After setting the channels, you can change the programme positions as you like. If any programme positions are unused or contain unwanted channels, you can disable them.

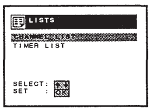
Before you start...

- Turn on the VCR and the TV.
- Set the TV to the video channel.

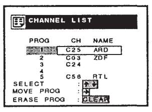

MENU
OK
CURSOR
↑/↓/←/→

Changing programme positions

1 Press MENU, then press CURSOR ↑/↓ to highlight LISTS and press OK.

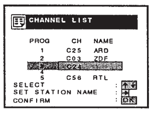

LISTS
CHANNEL LIST
TIMER LIST
SELECT : ↑↓
SET : OK

2 Press CURSOR ↑/↓ to highlight CHANNEL LIST, then press OK.


CHANNEL LIST
PROG CH NAME
1 C25 ARD
2 C03 ZDF
3 C24
4
5 C56 RTL
SELECT : ↑↓
MOVE PROG : →
ERASE PROG : CLEAR

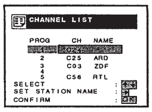
3 Press CURSOR ↑/↓ to highlight the row on which you want to change the programme position, then press CURSOR →.

To display other pages for programme positions 6 to 60, press CURSOR ↑/↓ repeatedly.


CHANNEL LIST
PROG CH NAME
1 C25 ARD
2 C03 ZDF
3 C24
4
5 C56 RTL
SELECT : ↑↓
SET STATION NAME : →
CONFIRM : OK

4 Press CURSOR ↑/↓ until the selected channel row moves to the desired programme position.

The selected channel is inserted at the new programme position and the intermediate channels are displaced to fill the gap.


CHANNEL LIST
PROG CH NAME
1 C24
2 C25 ARD
3 C03 ZDF
4
5 C56 RTL
SELECT : ↑↓
SET STATION NAME : →
CONFIRM : OK

5 Press OK to confirm the setting.

6 To change the programme position of another station, repeat steps 3 to 5.

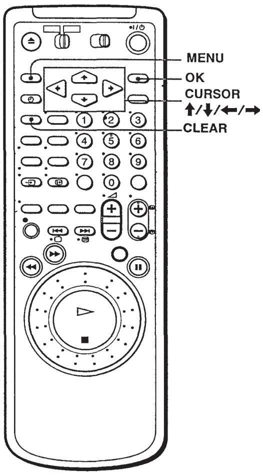
7 Press MENU to exit the menu.

continued

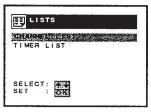
Changing/disabling programme positions (continued)

Disabling unwanted programme positions

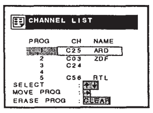
After presetting channels, you can disable unused programme positions.The disabled positions will be skipped later when you press the PROG +/– buttons.


MENU
OK
CURSOR
↑/↓/←/→
CLEAR

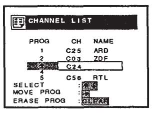
1 Press MENU, then press CURSOR ↑/↓ to highlight LISTS, and press OK.


LISTS
CHANNEL LIST
TIMER LIST
SELECT : ↑↓
SET : OK

2 Press CURSOR ↑/↓ to highlight CHANNEL LIST, then press OK.

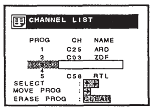

CHANNEL LIST
PROG CH NAME
1 C25 ARD
2 C03 ZDF
3 C24
4
5 C56 RTL
SELECT : ↑↓
MOVE PROG : →
ERASE PROG : CLEAR

3 Press CURSOR ↑/↓ to highlight the row on which you want to disable.


CHANNEL LIST
PROG CH NAME
1 C25 ARD
2 C03 ZDF
3 C24
4
5 C56 RTL
SELECT : ↑↓
MOVE PROG : →
ERASE PROG : CLEAR

4 Press CLEAR.

The selected row will be cleared as shown on the right.


CHANNEL LIST
PROG CH NAME
1 C25 ARD
2 C03 ZDF
3
4
5 C56 RTL
SELECT : ↑↓
MOVE PROG : →
ERASE PROG : CLEAR

5 Repeat steps 3 and 4 for any other programme positions you want to disable.

6 Press MENU to exit the menu.

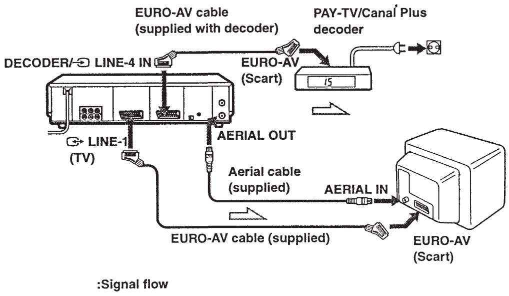
Notes

- The menu disappears automatically if you don't proceed for more than a few minutes.
- Be sure to select the programme position you want to disable correctly. If you disable a programme position by mistake, you need to reset that channel manually.

Setting the PAY-TV/Canal Plus decoder

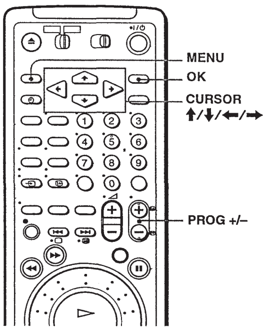
You can watch or record PAY-TV/Canal Plus programmes if you connect a decoder (not supplied) to the VCR.

Connecting a decoder


EURO-AV cable
(supplied with decoder)
PAY-TV/Canal Plus
decoder
DECODER/⊡ LINE-4 IN
EURO-AV
(Scart)
15
AERIAL OUT
⊡ LINE-1
(TV)
Aerial cable
(supplied)
AERIAL IN
EURO-AV cable (supplied)
EURO-AV
(Scart)
:Signal flow

Setting PAY-TV/Canal Plus channels

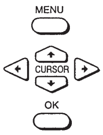
To watch or record PAY-TV/Canal Plus programmes, set your VCR to receive the channels using the on-screen display.


MENU
OK
CURSOR
↑/↓/←/→
PROG +/–

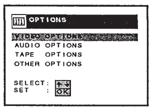
Before you start…

- Turn on the VCR, the TV, and the decoder.
- Set the TV to the video channel.

1

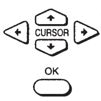

MENU
CURSOR
OK

Press MENU, then press CURSOR ↑/↓ to highlight OPTIONS and press OK.

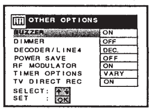


```
OPTIONS
VIDEO OPTIONS
AUDIO OPTIONS
TAPE  OPTIONS
OTHER OPTIONS

SELECT: ↑↓
SET   : OK
```

2

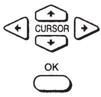


Press CURSOR ↑/↓ to highlight OTHER OPTIONS, then press OK.

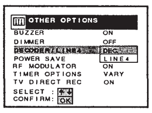


```
OTHER OPTIONS
BUZZER              ON
DIMMER              OFF
DECODER/LINE4       DEC.
POWER SAVE          OFF
RF MODULATOR        ON
TIMER OPTIONS       VARY
TV DIRECT REC       ON
SELECT: ↑↓
SET   : OK
```

3



Press CURSOR ↑/↓ to highlight DECODER/LINE4, then press OK.

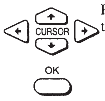


```
OTHER OPTIONS
BUZZER              ON
DIMMER              OFF
DECODER/LINE4       DEC.
POWER SAVE          LINE4
RF MODULATOR        ON
TIMER OPTIONS       VARY
TV DIRECT REC       ON
SELECT : ↑↓
CONFIRM: OK
```

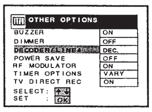
continued

Setting the PAY-TV/Canal Plus decoder (continued)

4



Press CURSOR ↑/↓ to highlight DEC., then press OK.

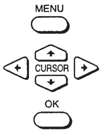


```
OTHER OPTIONS
BUZZER              ON
DIMMER              OFF
DECODER/LINE4       DEC.
POWER SAVE          OFF
RF MODULATOR        ON
TIMER OPTIONS       VARY
TV DIRECT REC       ON
SELECT: ↑↓
SET   : OK
```

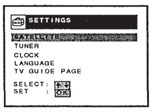
5

Press MENU to exit the menu.

6

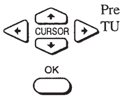

MENU
CURSOR
OK

Press MENU, then press CURSOR ↑/↓ to highlight SETTINGS and press OK.

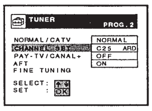


```
SETTINGS
SATELLITE
TUNER
CLOCK
LANGUAGE
TV GUIDE PAGE

SELECT: ↑↓
SET   : OK
```

7

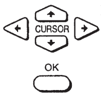


Press CURSOR ↑/↓ to highlight TUNER, then press OK.

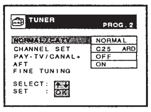


```
TUNER                  PROG.2

NORMAL/CATV         NORMAL
CHANNEL SET         C25   ARD
PAY-TV/CANAL+       OFF
AFT                 ON
FINE TUNING

SELECT: ↑↓
SET   : OK
```

8

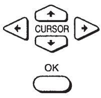


Press CURSOR ↑/↓ to highlight NORMAL/CATV, then press OK.



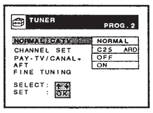
```
TUNER                  PROG.2

NORMAL/CATV         NORMAL
CHANNEL SET         C25   ARD
PAY-TV/CANAL+       OFF
AFT                 ON
FINE TUNING

SELECT: ↑↓
SET   : OK
```

9



Press CURSOR ↑/↓ to highlight NORMAL, then press OK.

To preset CATV (Cable Television) channels, select CATV.

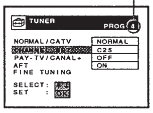


```
TUNER                  PROG.2
NORMAL/CATV         NORMAL
CHANNEL SET         C25   ARD
PAY-TV/CANAL+       OFF
AFT                 ON
FINE TUNING

SELECT: ↑↓
SET   : OK
```

10

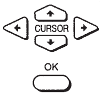
Press PROG +/– to select the desired programme position.

Selected programme position

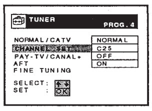


```
TUNER                  PROG 4
NORMAL/CATV         NORMAL
CHANNEL SET         C25
PAY-TV/CANAL+       OFF
AFT                 ON
FINE TUNING

SELECT: ↑↓
SET   : OK
```

11

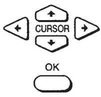


Press CURSOR ↑/↓ to highlight CHANNEL SET, then press OK.



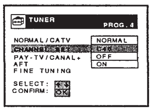
```
TUNER                  PROG.4
NORMAL/CATV         NORMAL
CHANNEL SET         C25
PAY-TV/CANAL+       OFF
AFT                 ON
FINE TUNING

SELECT: ↑↓
SET   : OK
```

12



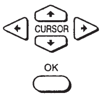
Press CURSOR ↑/↓ to select the PAY-TV/Canal Plus channels.

When the desired channel is tuned, press OK.

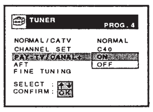


```
TUNER                  PROG.4
NORMAL/CATV         NORMAL
CHANNEL SET         C40
PAY-TV/CANAL+       OFF
AFT                 ON
FINE TUNING

SELECT: ↑↓
CONFIRM: OK
```

13



Press CURSOR ↑/↓ to highlight PAY-TV/CANAL+, then press OK.

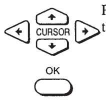


```
TUNER                  PROG.4
NORMAL/CATV         NORMAL
CHANNEL SET         C40
PAY-TV/CANAL+       ON
AFT                 OFF
FINE TUNING

SELECT : ↑↓
CONFIRM: OK
```

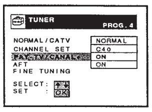
continued

Setting the PAY-TV/Canal Plus decoder (continued)

14



Press CURSOR ↑/↓ to highlight ON, then press OK.



NORMAL / CATV	NORMAL
CHANNEL SET	C40
PAY-TV/CANAL+	ON
AFT	ON
FINE TUNING	

SELECT : ↑↓
SET : OK

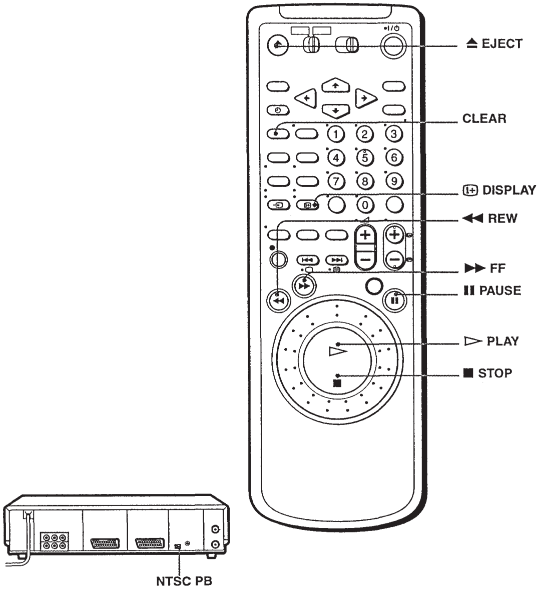
15

Press MENU to exit the menu.

Notes

- The menu disappears automatically if you don't proceed for more than a few minutes.
- To superimpose subtitles while watching PAY-TV/Canal Plus programmes, make both decoder-VCR and VCR-TV connections using 21-pin EURO-AV cables that are compatible with the RGB signals.You cannot record subtitles on the VCR.
- When you watch PAY-TV/Canal Plus programmes using the aerial input of the TV, press ⊸ TV/VIDEO so that the VIDEO indicator appears in the display window.
- Some PAY-TV/Canal Plus decoders may not work if you set the PAY-TV/CANAL + setting to ON. In this case, set it to OFF.

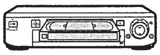
Playing a tape



1 Turn on your TV and set it to the video channel.

2 Insert a tape.

The VCR turns on and starts playing automatically if you insert a tape with its safety tab removed.



continued

Playing a tape (continued)

3

Press ▷ PLAY.

When the tape reaches the end, it will rewind automatically.

Additional tasks

To	Press
Stop play	■ STOP
Pause play	II PAUSE
Resume play after pause	II PAUSE or ▷ PLAY
Fast-forward the tape	▶▶ FF during stop
Rewind the tape	◀◀ REW during stop
Eject the tape	≜ EJECT

To play an NTSC-recorded tape

Set NTSC PB at the rear of the VCR according to the colour system of your TV.

When your TV is	Set NTSC PB to
PAL only	ON PAL TV
PAL and NTSC	NTSC 4.43

To use the time counter

At the point on the tape that you want to find later, press CLEAR. The counter in the display window resets to "0:00:00." Search for the point afterwards by referring to the counter.

To display the counter on the TV screen, press ⊞ DISPLAY.

Notes

- The counter resets to "0:00:00" whenever a tape is reinserted.
- The counter stops counting when it comes to a portion with no recording.
- The time counter does not appear on the TV screen when using an NTSC-recorded tape.
- Depending on your TV, the following may occur while playing an NTSC-recorded tape:
  - The picture becomes black and white.
  - The picture shakes.
  - No picture appears on the TV screen.
  - Black streaks appear horizontally on the TV screen.
  - The colour density increases or decreases.
- If you playback a tape in LP or EP mode with NTSC system, the sound is heard in monaural.
- While setting the menu on the TV screen, you cannot use CURSOR ↑/↓/←/→ buttons for tape operation.

Starting playback automatically with one button (One Touch Play)

If you use the SMARTLINK connection, you can turn on the VCR and the TV, set the TV to the video channel, and start playback automatically with one button.

1 Insert a tape.

The VCR automatically turns on.

If you insert a tape with its safety tab removed, the TV turns on and switches to the video channel. Playback starts automatically.

2 Press ▷ PLAY.

The TV turns on and switches to the video channel automatically. Playback starts.

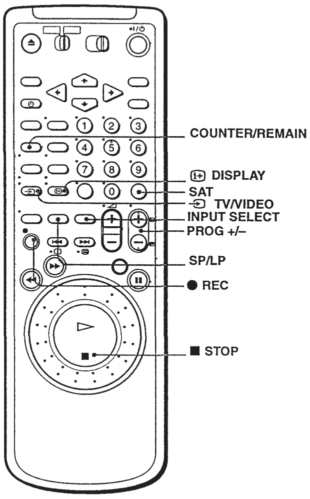
Tip

- When there already is a tape in the VCR, the VCR and the TV turn on, the TV is set to the video channel, and playback starts automatically in one sequence when you press ▷ PLAY.

Note

- When you use the One Touch Play function, leave the TV on or in the standby mode.

Recording TV programmes

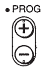


1 Turn on your TV and set it to the video channel.

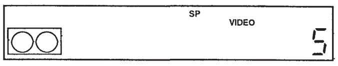
To record from a decoder, turn it on.

2 Insert a tape with its safety tab in place.

3

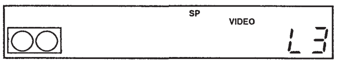


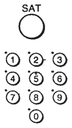
- To record a terrestrial channel.
  Press PROG +/– until the programme position number you want appears in the display window.



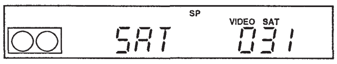
INPUT SELECT

- To record a video source from the LINE-1 (TV) or LINE-4 (Scart) connector, or the LINE-2IN or LINE-3 IN jacks. Press INPUT SELECT until L1, L2, L3 or L4 appears in the display window.





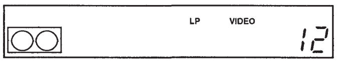
- To select a satellite channel.
  Press SAT. The SAT indicator lights up in the display window. Then enter a three digit satellite channel number with the programme number buttons.



4

Press SP/LP to select the tape speed, SP or LP.

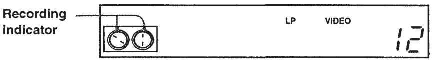
LP (Long Play) provides recording time twice as long as SP, however, SP (Standard Play) produces better picture and audio quality.



5

Press ● REC to start recording.

The recording indicator lights up red in the display window.



To stop recording

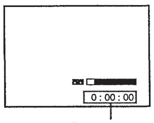
Press ■ STOP.

continued

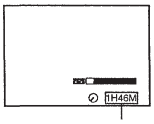
Recording TV programmes (continued)

To check the remaining time

Press DISPLAY. With the display on, press COUNTER/REMAIN to check the remaining time. Each time you press COUNTER/REMAIN, the time counter and the remaining time appear alternately. The remaining time with the ⊘ indicator also appears in the display window.



Time counter



Remaining time

In order to get an accurate remaining time indication, be sure the TAPE LENGTH item in TAPE OPTIONS menu is set according to the tape type you use (see page 75).

To watch another TV programme while recording

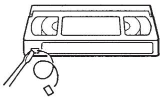
1 Press TV/VIDEO on the remote commander to turn off the VIDEO indicator in the display window.

2 Select another programme position on the TV.

To protect a recording

To prevent accidental erasure, break off the safety tab as illustrated. To record on a tape again, cover the tab hole with adhesive tape.

You can also protect a recording by using the SmartFile function (see page 102).



Safety tab

Tips

- To select a programme position, you can use the programme number buttons on the remote commander. For two-digit numbers, press the –/– –(ten's digit) button followed by the programme number buttons.
- The display appears on the TV screen indicating information about the tape, but the information won't be recorded on the tape
- If you don't want to watch TV while recording, you can turn off the TV.
  When using a decoder, make sure to leave it on.

Notes

- The display does not appear during still (pause) mode or slow-motion playback.
- The display will not appear while playing an NTSC-recorded tape.
- If a tape has portions recorded in both PAL and NTSC systems, the time counter reading will not be correct. This discrepancy is due to the difference between the counting cycles of the two video systems.
- You cannot watch a PAY-TV/Canal Plus programme while recording another PAY-TV/Canal Plus programme.
- The remaining time is intended for rough measurement only.
- The remaining time will be displayed only about 30 seconds after the tape is inserted.

Recording what you are watching on the TV (TV Direct Rec)

If you use the SMARTLINK connection, you can easily record what you are watching on the TV (other than tapes being played on the VCR).

1 Insert a tape with its safety tab in place.

2 Press ● REC while you are watching a TV programme or external source.

The VCR automatically turns on, then the TV indicator lights up and the VCR starts recording what you are watching on the TV.

Tips

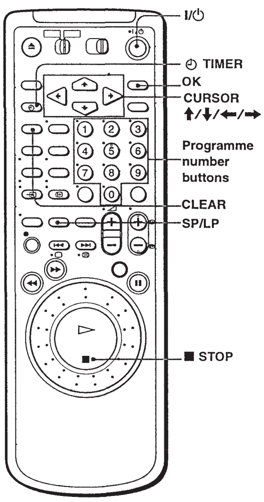
- The TV indicator appears in the display window after you press ● REC in some situations such as:
  - when you are watching a source connected to the TV's line input, or
  - when the TV tuner preset data for the programme position is different from the data in the VCR tuner preset.
- If there is a tape with its safety tab in place in the VCR, the VCR automatically turns on and starts recording what you are watching on the TV when you press ● REC.
- You can turn the TV Direct Rec function ON and OFF in the OTHER OPTIONS menu (see page 75).

Notes

- You cannot record what you are watching using this method when the VCR is in the following modes : pause, timer standby, tuner preset, Auto Set Up, and recording.
- When the TV indicator is lit in the display window, do not turn off the TV nor change the TV programme position. When the TV indicator is not lit, the VCR continues recording the programme even if you change the TV programme position on the TV.

Recording TV programmes using the ShowView system

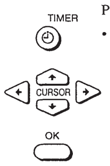
The ShowView system is the feature that simplifies programming the VCR to make timer recording. Just enter the ShowView number listed in the TV programme guide. The date, times, and programme position of that programme are set automatically. You can preset up to eight programmes at a time.



Before you start…

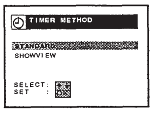
- Check that the VCR clock is set to the correct time and date.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- Turn on your TV and set it to the video channel.
- If you insert a tape with the SmartFile function, make sure the total recording time doesn't overlap the protected programme. For details about the SmartFile function, see page 82.
- Set TIMER OPTIONS to SHOWVIEW or VARY in the OTHER OPTIONS menu (see page 77).

1

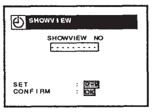


Press ⏲ TIMER.

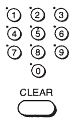
- When you set TIMER OPTIONS to VARY
  The TIMER METHOD menu appears on the TV screen. Press CURSOR ↑/↓ to select SHOWVIEW, then press OK.



- When you set TIMER OPTIONS to SHOWVIEW
  The SHOWVIEW menu appears on the TV screen.

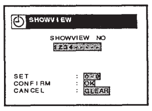


2



Press the programme number buttons to enter the ShowView number.

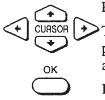
If you make a mistake, press CLEAR and re-enter the correct number.



continued

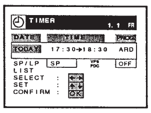
Recording TV programmes using the ShowView system (continued)

3



Press OK.

The date, start and stop times, programme position, tape speed, and VPS/PDC setting appear on the TV screen.



If "– –" appears in the "PROG." (programme) column (this may happen for local broadcasts), you have to set the appropriate programme position manually.

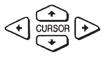
- To select a satellite channel
  Press SAT. "SAT ---" appears in the PROG position on the TV screen. Then enter a three digit channel number with the number buttons.
- To select a terrestrial channel.
  Press CURSOR ↑/↓ to select the desired programme position.
- To select a video source from the LINE-1 (TV) or LINE-4 IN connector, or the LINE-2 IN or the LINE-3 jacks.
  Press INPUT SELECT to select the desired video source.

You will only have to do this operation once for the referred channel. The VCR will then store your setting.

When you have selected A (Austria), CH (Switzerland), or D (Germany) with the country selection in the Auto Set Up procedure, the VPS/PDC function is automatically set to ON.
For details of the VPS/PDC function, see "Timer recording with VPS/PDC signals" on page 59.

If the information is incorrect, press CLEAR to cancel the setting.

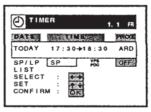
4



If you want to change the date, tape speed, and the VPS/PDC function setting:

1 Press CURSOR ←/→ to highlight the item you want to change.

2 Press CURSOR ↑/↓ to reset it.



- To record the same programme every day or the same day every week, see "Daily/weekly recording" on page 59.
- To use the VPS/PDC function, set VPS/PDC to ON. For details of the VPS/PDC function, see "Timer recording with VPS/PDC signals" on page 59.
- To change the setting, press MENU, and highlight LIST, then select TIMER LIST and press OK. To enter the timer setting and change it, press again OK.

If the informations are not correct, press CLEAR to cancel the settings.

5

Press OK to confirm the setting.

6

Press I/⏻ to turn off the VCR.

The ⏲ indicator appears in the display window and the VCR stands by for recording.

To stop recording

To stop the VCR while recording, press ■ STOP.

Daily/weekly recording

In step 4 above, press CURSOR ↓ to select the recording pattern. Each time you press CURSOR ↓, the indication changes as shown below. Press CURSOR ↑ to change the indication in reverse order.

TODAY → SU-SA (Sunday to Saturday) → MO-SA (Monday to Saturday) → MO-FR (Monday to Friday) → SA (every Saturday) ..... → MO (every Monday) → SU (every Sunday) → 1 month later → (dates count down) → TOMORROW → TODAY

Timer recording with VPS/PDC signals

Some broadcast systems transmit VPS (Video Programme System) or PDC (Programme Delivery Control) signals with their TV programmes. These signals ensure that your timer recordings are made regardless of broadcast delays, early starts, or broadcast interruptions (with the VPS or PDC indicator in the display window lit).

In step 4 above, press CURSOR ↑/↓ to turn on/off the VPS/PDC indication after you set the recording date. If you do not want to set the VPS/PDC function, turn off the VPS/PDC indication.

You can also use the VPS/PDC function for a source connected to the LINE-1 (TV) and LINE-4 IN (Scart) connectors, or the LINE-2 IN or LINE-3 IN jacks.

continued

Recording TV programmes using the ShowView system (continued)

To use the VCR after setting the timer

To use the VCR before a timer recording begins, just press I/⏻. The ⌚ indicator turns off and the VCR switches on. Remember to press I/⏻ to reset the VCR after using the VCR.

You can also do the following tasks while the VCR is recording:

- Reset the counter.
- Display tape information on the TV screen.
- Check the timer settings see “Setting the timer manually” on page 61.
- Watch another TV programme.

Tips

- To set the programme position with a two digit number, press -/-- (ten's digit) button followed by the programme number button.
- To set the programme position, you can also use the PROG +/– or programme number buttons.
- To set the tape speed, you can also use the SP/LP button.
- When you are recording a programme in the SP mode and the remaining tape becomes shorter than the recording time, the tape speed is automatically changed to the LP mode. Note that some interference will appear on the picture at the point the tape speed is changed. If you want to keep the same tape speed, set AUTO LONG PLAY to OFF in the TAPE OPTIONS menu (see page 75).
- To check, change, or cancel the programme setting, press CURSOR ←/→ to choose LIST, then press OK after step 4. For details, see step 3 in “Checking/changing/cancelling timer settings” on page 68.

Notes

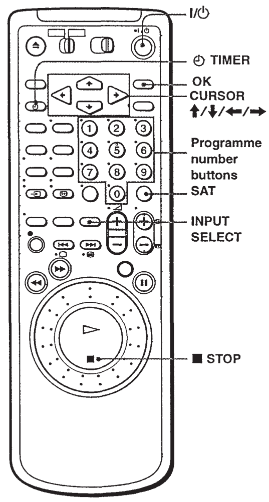
- When setting the timer with VPS/PDC signals, enter the start and stop times exactly as indicated in the TV programme guide, otherwise the VPS/PDC function won't work and the recording won't start.
- If the VPS/PDC signal is too weak or the broadcasting station failed to transmit VPS/PDC signals, the VCR will start recording at the set time without using the VPS/PDC function.
- The ⌚ indicator flashes in the display window when you press I/⏻ with no tape inserted.
- The VPS/PDC function is automatically set to OFF for the timer recording of a satellite programme.
- When you set TIMER OPTIONS to STANDARD in the OTHER OPTIONS menu, the SHOWVIEW menu does not appear on the TV screen. Select SHOWVIEW or VARY.

Setting the timer manually

If the ShowView system is not available in your area, follow the instructions below to set the timer to record programmes.

Before you start...

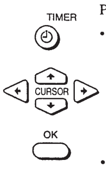
- Check that the VCR clock is set to the correct time and date.
- Insert a tape with its safety tab in place. Make sure the tape is longer than the total recording time.
- To record from a decoder, turn it on.
- Turn on your TV and set it to the video channel.
- If you insert a tape with the SmartFile function, make sure the total recording time doesn't overlap the protected programme. For details about the SmartFile function, see page 82.
- Set TIMER OPTIONS to STANDARD or VARY in the OTHER OPTIONS menu (see page 77).



continued

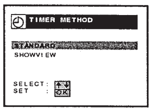
Setting the timer manually (continued)

1

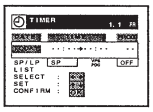


Press ⌚ TIMER.

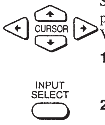
- When you set TIMER OPTIONS to VARY
  The TIMER METHOD menu appears on the TV screen. Press CURSOR ↑/↓ to select STANDARD, then press OK.



- When you set TIMER OPTIONS to STANDARD
  The TIMER menu appears on the TV screen.

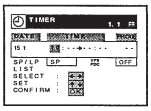


2

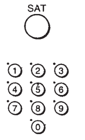


Set the date, start and stop times, programme position, tape speed, and VPS/PDC function:

1. Press CURSOR → to highlight each item in turn.
2. Press CURSOR ↑/↓ to set each item.



To correct a setting, press CURSOR ← to return to that setting and reset.

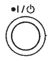


- To record the same programme every day or the same day every week, see “Daily/weekly recording” on page 63.
- To use the VPS/PDC function, set VPS/PDC to ON. For details of the VPS/PDC function, see “Timer recording with VPS/PDC signals” on page 59.
- To record from a decoder or other source connected to the LINE-1 (TV) or LINE-4 IN connectors, the LINE-2 IN or the LINE-3 IN jacks, press INPUT SELECT to display “L1,” “L2,” “L3”or “L4” in the “PROG.” position.
- To record from the satellite tuner, press SAT to display “SAT---” in the PROG position then enter a three digit number with the programme number buttons.

3

Press OK to confirm the setting.

4



Press I/⏻ to turn off the VCR.

The ⌚ indicator appears in the display window and the VCR stands by for recording.

To record from a decoder or other sources, leave the connected equipment switched on.

To stop recording

To stop the VCR while recording, press ■ STOP.

Daily/weekly recording

In step 2 above, press CURSOR ↓ to select the recording pattern. Each time you press CURSOR ↓, the indication changes as shown below. Press CURSOR ↑ to change the indication in reverse order.

TODAY → SU-SA (Sunday to Saturday) → MO-SA (Monday to Saturday) → MO-FR (Monday to Friday) → SA (every Saturday) ..... → MO (every Monday) → SU (every Sunday) → 1 month later → (dates count down) → TOMORROW → TODAY

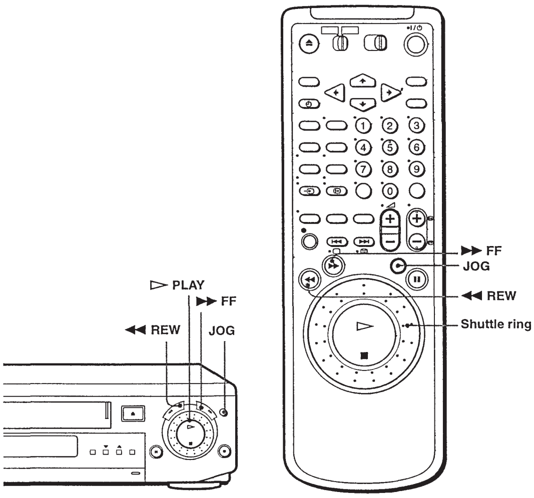
Tips

- To set the programme position, you can also use the PROG +/– or programme number buttons.
- To set the tape speed, you can also use the SP/LP button.
- When you are recording a programme in the SP mode and the remaining tape becomes shorter than the recording time, the tape speed is automatically changed to the LP mode. Note that some interference will appear on the picture at the point the tape speed is changed. If you want to keep the same tape speed, set AUTO LONG PLAY to OFF in the TAPE OPTIONS menu (see page 75).
- Even if you set TIMER OPTIONS to SHOWVIEW in the OTHER OPTIONS menu, you can set the timer manually. Press MENU to select TIMER, then go to step 2.

Notes

- When setting the timer with VPS/PDC signals, enter the start and stop times exactly as indicated in the TV programme guide, otherwise the VPS/PDC function won't work and the recording won't start.
- If the VPS/PDC signal is too weak or the broadcasting station failed to transmit VPS/PDC signals, the VCR will start recording at the set time without using the VPS/PDC function.
- The VPS/PDC function is automatically set to OFF for the timer recording of a satellite programme.
- The ⌚ indicator flashes in the display window when you press I/⏻ with no tape inserted.

Playing/searching at various speeds



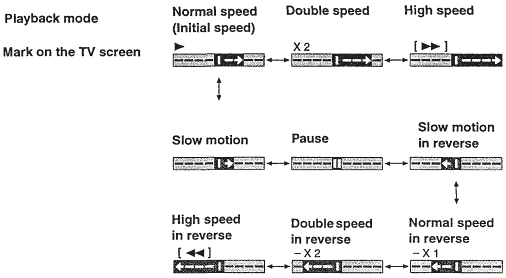
Playback options	Operation
Fast-forward or rewind	During stop, press ▶▶FF or ◀◀REW.
View the picture during fast-forward or rewind	During fast-forward, hold ▶▶FF down. During rewind, hold ◀◀REW down.
Rewind and start play	During stop, hold ◀◀REW down on the VCR and press ▷ PLAY on the VCR then release both.

Using the shuttle ring

With the shuttle ring, you can operate a variety of playback options. There are two ways for using the shuttle ring, normal mode and jog mode.

To use the shuttle ring in normal mode.

During playback or pause, turn the shuttle ring clockwise or anticlockwise. Each change in the shuttle ring position changes the playback mode, and the corresponding mark appears on the TV screen for a few seconds in the following way if the on-screen display function is on :



To use the shuttle ring in jog mode

Use this mode for frame-by-frame playback.

Press JOG to enter the jog mode. The JOG button lights up. If you change to the jog mode during any playback mode, the playback pauses so you can see a still picture. Each change in the shuttle ring position shifts the picture one frame. To shift frames in reverse, turn the shuttle ring anticlockwise. The frame shift speed depends on the speed you turn the shuttle ring. To resume normal mode, press JOG again. The JOG button goes off.

continued

Playing/searching at various speeds (continued)

To resume normal playback

Press ▷ PLAY.

Tip

- Adjust the picture using the TRACKING +/– buttons if:
  - – Streaks appear while playing in slow motion.
  - – Bands appear at the top or bottom while pausing.
  - – The picture shakes while pausing.

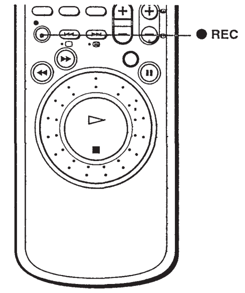
  To set tracking to the centre position, press both buttons (+/–) at the same time.

Notes

- The playback sound is muted during the operations in the above table.
- In the LP mode, noise may appear or there may be no colour.
- If the playback mode mark doesn't appear on the TV screen, press ⊕ DISPLAY.

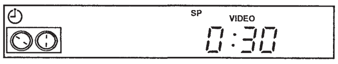
Setting the recording duration time

After starting recording in the normal way, you can have the VCR stop recording automatically after a specified duration.



1 While recording, press ● REC.

The ⏲ indicator appears in the display window.



2 Press ● REC repeatedly to set the duration.

Each press advances the time in increments of 30 minutes.

→ 0:30 → 1:00 ----→ 5:30 → 6:00 → Normal recording

The tape counter decreases minute by minute to 0:00, then the VCR stops recording and turns off automatically.

To extend the duration

Press ● REC repeatedly to set a new duration.

To cancel the duration

Press ● REC repeatedly until the ⏲ indicator disappears and the VCR returns to normal recording mode.

To stop recording

To stop the VCR while recording, press ■ STOP.

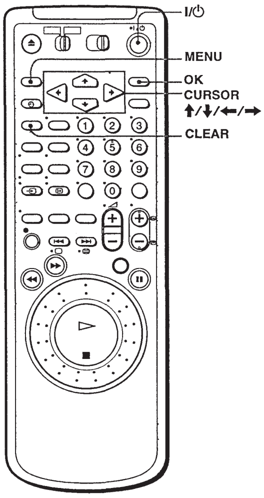
Note

- You cannot display the current tape time in the display window when setting the recording duration

Checking/changing/cancelling timer settings

Before you start…

- Turn on your TV and set it to the video channel.

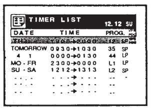


1 Press I/⏻ to turn on the VCR.

2 Press MENU, then press CURSOR ↑/↓ to highlight LISTS and press OK.

3 Press CURSOR ↑/↓ to highlight TIMER LIST, then press OK:

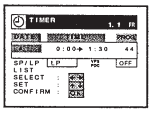
- If you want to change or cancel a setting, go on to the next step.
- If you do not need to change or cancel the settings, press MENU, then turn off the VCR to return to recording standby.



```
TIMER LIST                     12.12 SU
DATE          TIME             PROG.
TOMORROW  0930→1030            35  SP
  4   1   0000→0130            44  LP
MO - FR   2300→0000            L1  LP
SU - SA   1212→1313            L2  SP
```

4 Press CURSOR ↑/↓ to select the setting you want to change or cancel, then press OK.

The selected setting appears in the TIMER menu.



```
TIMER                          1. 1  FR
DATE          TIME             PROG.
             0:00→ 1:30          44
SP/LP  LP              VPS/PDC  OFF
LIST
SELECT   :  ←→
SET      :  ↑↓
CONFIRM  :  OK
```

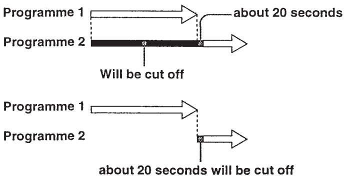
5
- To change the setting, press CURSOR ←/→ to highlight the item you want to change, and press CURSOR ↑/↓ to reset it.
- To cancel the setting, press CLEAR.

6 Press MENU.

If any settings remain, turn off the VCR to return to recording standby.

When the timer settings overlap

The programme that starts first has priority and the second programme starts recording only after the first programme has finished. If the programmes start at the same time, the programme listed first in the menu has priority.



Tip

- In step 6 above, you can check the TIMER LIST by selecting LISTS and pressing OK. Press MENU to exit the TIMER LIST.

Recording stereo and bilingual programmes

In ZWEITON (German stereo) system

This VCR automatically receives and records stereo and bilingual programmes based on the ZWEITON system. When a stereo or bilingual programme is received, the STEREO indicator appears in the display window.

To select bilingual sound while recording

Press AUDIO MONITOR to select the sound you want.

To listen to	On-screen display	Display window
Main	MAIN	STEREO
Sub	SUB	STEREO
Main and sub	MAIN/SUB	STEREO

In NICAM system (SLV-SF99NP only)

This VCR receives and records stereo and bilingual programmes based on the NICAM system (the NICAM indicator appears). When a stereo or bilingual programme is received, the STEREO indicator appears in the display window.

To record a NICAM programme, HIFI AUDIO in the AUDIO OPTIONS menu should be set to NICAM (initial setting). To check the menu setting, see page 76 for details.

To select the sound while recording

Press AUDIO MONITOR to select the sound you want.

Stereo programme

To listen to	On-screen display	Display window
Stereo	STEREO	STEREO
Standard sound*	No indicator	No indicator

* Usually the mixed sound of left and right channels (monaural)

Bilingual programme

To listen to	On-screen display	Display window
Main	MAIN	STEREO
Sub	SUB	STEREO
Main and sub	MAIN/SUB	STEREO
Standard sound*	No indicator	No indicator

* Usually the main sound (monaural)

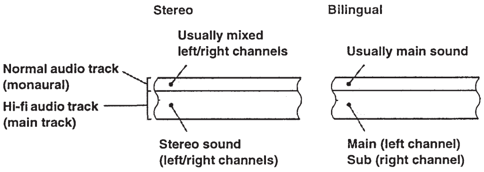
Selecting the sound during playback

Press AUDIO MONITOR to select the sound you want.

To listen to	On-screen display	Display window
Stereo/main and sub (left and right channels)	STEREO	STEREO
Left channel/main	LCH	STEREO
Right channel/sub	RCH	STEREO
Standard sound	No indicator	No indicator

How sound is recorded on a video tape

The VCR records sound onto two separate tracks. Hi-fi audio is recorded onto the main track along with the picture. Monaural sound is recorded onto the normal audio track along the edge of the tape.

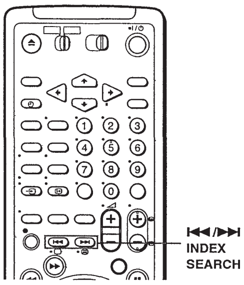

Stereo
Bilingual
Usually mixed left/right channels
Usually main sound
Normal audio track (monaural)
Hi-fi audio track (main track)
Stereo sound (left/right channels)
Main (left channel)
Sub (right channel)

Notes

- To listen to playback sounds in stereo, you must use the EURO-AV or AUDIO OUT connections.
- When you play a tape recorded in monaural, the sound is heard in monaural regardless of the AUDIO MONITOR setting.
- If the AUDIO MONITOR button does not function, check that AUDIO MIX in the AUDIO OPTIONS menu is set to OFF (see page 76).
- If HIFI AUDIO is set to STANDARD, the standard sound will be recorded on both the hi-fi and normal audio tracks. Pressing AUDIO MONITOR will not change the sound (SLV-SF99NP only).

Searching using the index function

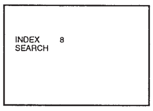
The VCR marks the tape with an index signal at the point where each recording begins. Use these signals as references to find a specific recording. The VCR can search up to 99 index signals ahead or behind the current position.



1. Insert an indexed tape into the VCR.

2. Press ⏮/⏭ INDEX SEARCH repeatedly to specify how many index signals ahead or behind you want to search :
   - To search ahead, press ⏭ INDEX SEARCH.
   - To search backwards, press ⏮ INDEX SEARCH.

   The VCR starts searching and the index number on the TV screen counts down to zero. Playback starts automatically from that point.



INDEX 8
SEARCH

To stop searching

Press ■ STOP.

Note

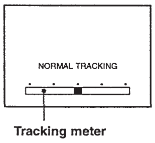
- No index signal will be added when recording starts from recording pause. However, an index signal will be marked if you change the programme position during recording pause.

Adjusting the picture

Adjusting the tracking

Although the VCR automatically adjusts the tracking when playing a tape (the ⊠ indicator flashes in the display window, then goes off), distortion may occur if the tape was recorded in poor condition. In this case, manually adjust the tracking.

During playback, press TRACKING +/– to display the tracking meter. The distortion should disappear as you press one of the two buttons (the ⊠ indicator lights up). To resume automatic tracking adjustments, eject the tape and re-insert it.
To set the tracking to the centre position, press TRACKING + and – buttons at the same time.

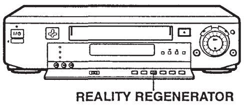


About the Reality Regenerator (RR) function

The Reality Regenerator (RR) function automatically restores the picture to its original quality during playback.

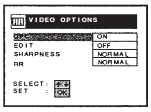
To use the RR function, press REALITY REGENERATOR. The REALITY REGENERATOR indicator lights up. You can set RR to HIGH or NORMAL in the VIDEO OPTIONS menu (see page 75).

To turn it off, press REALITY REGENERATOR. The REALITY REGENERATOR indicator lights off.



About the Optimum Picture Control (OPC) function

The Optimum Picture Control (OPC) function automatically improves recording and playback quality by adjusting the VCR to the condition of the video heads and tape. To maintain better picture quality, we recommend that you set OPC to ON in the VIDEO OPTIONS menu (with the OPC indicator in the display window lit). For details, see page 75.



VIDEO OPTIONS
OPC ON
EDIT OFF
SHARPNESS NORMAL
RR NORMAL
SELECT : ↑↓
SET : OK

OPC playback

The OPC function automatically works on all types of tapes, including rental tapes and tapes that were not recorded with OPC.

continued

Adjusting the picture (continued)

OPC recording

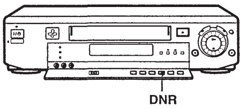
Whenever you insert a tape and start recording for the first time, the VCR adjusts to the tape using the OPC function (the OPC indicator flashes rapidly). This adjustment is retained until the tape is ejected.

To deactivate the OPC function

Set OPC to OFF in the VIDEO OPTIONS menu. The OPC indicator in the display window goes off.

About the Digital Noise Reduction (DNR) function

Digital Noise Reduction (DNR) automatically improves playback quality by the digital signal process. To obtain better quality, we recommend you to activate the DNR function by pressing the DNR button on the VCR (the DNR indicator lights up on the VCR).

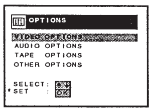


Notes

- You can adjust the tracking for the NTSC-recorded tape but the tracking meter won't be displayed.
- With the Auto Long Play function on, the OPC function will work only in SP mode. If the tape speed automatically switches from SP to LP, the OPC function turns off. However, if the entire programme is recorded in LP mode, the OPC function will work.
- There is a delay of about ten seconds before the VCR actually starts recording while the VCR analyses the tape. To avoid the delay, first set the VCR to recording pause (the OPC indicator flashes slowly) and press ● REC to have the VCR analyse the tape (the OPC indicator flashes rapidly). After the OPC indicator stops flashing, press ❚❚ PAUSE to start recording immediately. If you want to start recording quickly without using the OPC function, first set the VCR to recording pause (the OPC indicator flashes slowly) and press ❚❚ PAUSE to start recording.

Changing menu options

1. Press MENU, then select OPTIONS and press OK.



OPTIONS
VIDEO OPTIONS
AUDIO OPTIONS
TAPE OPTIONS
OTHER OPTIONS
SELECT : ↑↓
SET : OK

2. Press CURSOR ↑/↓ to highlight the kind of option to change, VIDEO OPTIONS, AUDIO OPTIONS, TAPE OPTIONS or OTHER OPTIONS then press OK.

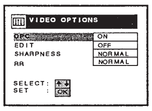
3. Press CURSOR ↑/↓ to select the option, then press OK to enter the pop up menu.

4. Press CURSOR ↑/↓ to select the desired setting, then press OK.

5. Press MENU to exit the menu.

VIDEO OPTIONS menu

Initial settings are indicated in bold print.



VIDEO OPTIONS
OPC ON
EDIT OFF
SHARPNESS NORMAL
RR NORMAL
SELECT : ↑↓
SET : OK

Menu option	Set this option to
OPC	• **ON** to switch on the OPC (Optimum Picture Control) function and improve picture quality. • OFF to switch off OPC.
EDIT	• ON to minimize picture deterioration when editing. • **OFF** to turn off EDIT.
SHARPNESS	• LOW to playback a poor quality tape. • **NORMAL** to playback an average quality tape. • HIGH to playback a good quality tape.
RR	• **NORMAL** for normal everyday use. • HIGH for well-used video tapes such as rented tapes. Select this option when NORMAL does not improve the picture quality. For details, see page 73.

Note

- When you playback with the EDIT function ON, the OPC and the SHARPNESS functions don't work.

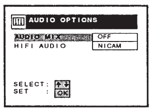
continued

Changing menu options (continued)

AUDIO OPTIONS menu

Initial settings are indicated in bold print.

SLV-SF99NP

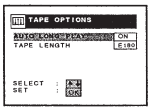


AUDIO OPTIONS
AUDIO MIX OFF
HIFI AUDIO NICAM
SELECT : ↑↓
SET : OK

Menu option	Set this option to
AUDIO MIX	• ON to listen to the hi-fi and normal audio tracks at the same time. The AUDIO MONITOR button will not function. • **OFF** to listen to the hi-fi and normal audio tracks separately. Select the sound using the AUDIO MONITOR button For details, see page 70.
HIFI AUDIO (only for SLV-SF99NP)	• STD to record standard sound on the hi-fi audio track. • **NICAM** to record NICAM broadcasts on the hi-fi audio track. For details, see page 70.

TAPE OPTIONS menu

Initial settings are indicated in bold print.

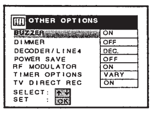


TAPE OPTIONS
AUTO LONG PLAY ON
TAPE LENGTH E180
SELECT : ↑↓
SET : OK

Menu option	Set this option to
AUTO LONG PLAY	• ON to automatically record from SP (Standard Play) to LP (Long Play) when the tape length is not long enough. • **OFF** to normally record in SP (Standard Play).
TAPE LENGTH	• **E180** to use an E-180 or shorter tape type. • E195 to use an E-195. • E240 to use an E-240. • E300 to use an E-300.

OTHER OPTIONS menu

Initial settings are indicated in bold print.



OTHER OPTIONS
BUZZER ON
DIMMER OFF
DECODER/LINE4 DEC.
POWER SAVE OFF
RF MODULATOR ON
TIMER OPTIONS VARY
TV DIRECT REC ON
SELECT : ↑↓
SET : OK

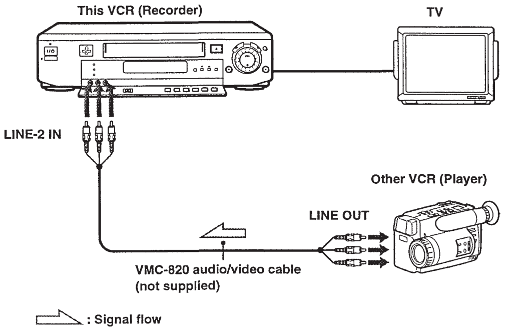
Menu option	Set this option to
BUZZER	• **ON** to output a beep sound. • OFF to deactivate it.
DIMMER	• ON to make the display window dim. • **OFF** to make it brighter.
DECODER/LINE4	• **DEC.** to use the DECODER/LINE-4 IN connector as the PAY-TV/Canal Plus decoder connector. • LINE4 to use the DECODER/LINE-4 IN connector as the line input connector.
POWER SAVE	• ON to turn off the indicators in the display window to save the VCR power. • **OFF** to turn on the indicators in the display window while the VCR is standing by.
RF MODULATOR	• ON if you connect the VCR to your TV using only the aerial cable. • **OFF** if you connect the VCR to your TV using the EURO-AV cable.
TIMER OPTIONS	• **VARY (variable)** to display the TIMER METHOD menu for selecting STANDARD or SHOWVIEW when pressing ⏲ TIMER button. • STANDARD to display the TIMER menu when pressing the ⏲ TIMER button. • SHOWVIEW to display the SHOWVIEW menu when pressing the ⏲ TIMER button. For details, see page 56 and 61.
TV DIRECT REC	• **ON** to activate the TV Direct Rec function. • OFF to deactivate it.

Note

- When you set a timer recording, the indicators in the display window remain on, even though POWER SAVE is set to ON.

Editing with another VCR or stereo system

How to connect to record on this VCR



Tip

- You can also use the LINE-4 IN connector or the LINE-3 IN jacks instead.

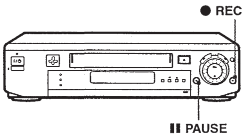
Notes

- Make sure you connect the plugs to jacks of the same colour.
- If the other VCR is a monaural type, leave the red plugs unconnected.
- If you connect this VCR to both the LINE IN and LINE OUT jacks of the other VCR, select the input correctly to prevent a humming noise.

How to connect to a stereo system

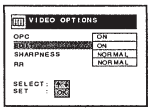
Connect the LINE-2 IN AUDIO L/R jacks on this VCR to the audio output jacks on the stereo system, using the RK-C510KS audio cable (not supplied).

Operation
(when recording on this VCR)



Before you start editing

- Turn on your TV and set it to the video channel. Press INPUT SELECT to display "L2" (or "L3" or "L4") in the display window.
- Press SP/LP to select the tape speed, SP or LP.
- On this VCR, set EDIT to ON in the VIDEO OPTIONS menu to display "EDIT" in the display window. If the other VCR has a similar feature, activate this one as well.



VIDEO OPTIONS
OPC ON
EDIT ON
SHARPNESS NORMAL
RR NORMAL
SELECT : ↑↓
SET : OK

1. Insert a source tape with its safety tab removed into the other (playback) VCR. Search for the point to start playback and set it to playback pause.
2. Insert a tape with its safety tab in place into this (recording) VCR. Search for the point to start recording and press ❚❚ PAUSE.
3. Press ● REC on this VCR to set it to recording pause.
4. To start editing, press the ❚❚ PAUSE buttons on both VCRs at the same time.

To stop editing

Press the ■ STOP buttons on both VCRs.

Tip

- To cut out unwanted scenes while editing, press ❚❚ PAUSE on this VCR when an unwanted scene begins. When it ends, press ❚❚ PAUSE again to resume recording.

Note

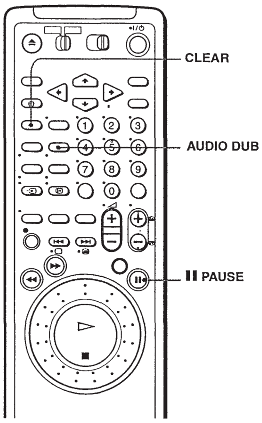
- If you start editing following the procedure above, the VCR won't start recording with the OPC function. To record a tape with the OPC function, press ● REC again during recording pause in step 3 so the VCR analyses the tape. Then, when you start editing in step 4, press ❚❚ PAUSE after the OPC indicator stops flashing. If you press ❚❚ PAUSE before the OPC indicator stops flashing, the OPC function is cancelled.

Audio dubbing

This feature lets you record over the normal audio track. The monaural sound previously recorded is replaced while the original hi-fi sound remains unchanged. Use this feature to add commentary to a tape that you have recorded with a camcorder.

Before you start…

- Turn on the TV and set it to the video channel



1. Insert a source tape into the stereo system (or the playback VCR). Search for the point to start playback and set it to playback pause.
2. Insert a prerecorded tape with its safety tab in place into this (recording) VCR. Search for the end of the section to be replaced and press II PAUSE.
3. Press CLEAR to reset the counter to “0H00M00S.”
4. Rewind the prerecorded tape to the beginning of the section to be replaced.

   The VCR enters pause mode.
5. Press AUDIO DUB.

   The ⊜ indicator appears in the display window.
6. To start editing, press the II PAUSE buttons on this VCR and the stereo system (or other VCR) at the same time.

   When the counter reaches “0H00M00S,” audio dubbing stops automatically.

To stop while editing

Press■ STOP on this VCR and the stereo system (or other VCR).

Note

- After you use this feature, the audio in playback mode is automatically set to monaural.

To listen to both the hi-fi and normal audio

Set AUDIO MIX to ON in the AUDIO OPTIONS menu (see page 76). Use this feature to listen to dubbed audio over the original hi-fi audio. When AUDIO MIX is set to ON, the AUDIO MONITOR button does not function. Note that by mixing both hi-fi and normal audio, some echo may appears.

About the SmartFile function

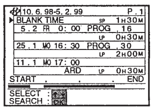
SmartFile* allows you to view a contents of your video tape (recording date, channel, name etc.) on the TV screen. It is no longer necessary to rewind, fast-forward, or playback a tape to find out what is recorded. You can also locate and start playback of a specific programme or find the position from which you want to start recording by using this list. Programme data is stored in the memory of the SmartFile label attached to the tape.

The following functions are possible using SmartFile :

Recording using the SmartFile function (page 84)

To use the SmartFile function, attach the SmartFile label to the tape. If you record a programme on the tape with a SmartFile label, the contents will appear on the SmartFile search list. With the SmartFile list, you can also easily find the begginning of the available recording space.

SmartFile search list



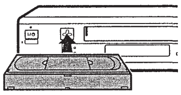
```
10. 6. 98-5. 2. 99                P . 1
▶BLANK TIME                   SP   1H30M
  5 . 2  FR   0: 00  PROG . 16
                              LP   0H30M
 25 . 1  MO  16: 30  PROG . 30
                              LP   2H00M
 11 . 1  MO  17: 00
                  ARD         LP   0H30M
START    .        .        .         END
SELECT  :
SEARCH  :
```

Selecting and playing a programme (page 89)

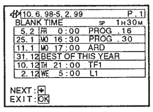
To playback a recorded programme, select the programme you want to watch using the SmartFile search list. The VCR locates the programme and playback starts automatically.

Checking the contents of a tape (page 90)

When you bring the SmartFile label close to the SMARTFILE sensor on the VCR, a summary of the recorded programmes appears in the SmartFile check list. It is not necessary to insert the tape into the VCR and press ▷ PLAY to find out what is recorded on it. This feature allows you to easily find the programme you want to watch, or to quickly find a tape with enough recording space.



SmartFile check list



```
10. 6. 98-5. 2. 99                P . 1
 BLANK TIME                   SP   1H30M
  5. 2 FR    0:00   PROG  .16
 25. 1 MO  16:30    PROG  .30
 11. 1 MO  17:00    ARD
 31. 12 BEST OF THIS YEAR
 10. 12 TH  21:00   TF1
  2. 12 WE   5:00   L1

NEXT : ↓
EXIT : OK
```

---

* SmartFile is a trademark of Sony Corporation

Labelling a recorded programme and tape (page 92)

You can attach an electronic "label" to the video tape and its programmes on the SmartFile list. Labelling the recorded programmes enables you to find a programme easily when you want to play it back. If TV guide pages are available in the Teletext, labelling recorded programmes is done automatically. Also, once you label a programme which you set to record regularly (i.e everyday, same day of the week, etc.), the VCR recognizes the label and will automatically label all future recordings of the same programme.

Registering the contents of a recorded tape in the SmartFile label (page 100)

You can register programmes recorded on a tape in the memory of a new SmartFile label.

Protecting a recorded programme (page 102)

You can protect a recorded programme from accidental over-recording or erasure.

Erasing the data of an unwanted programme (page 104)

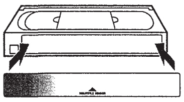
By erasing a programme from the SmartFile list, the VCR will record over the unwanted programme.

Recording using the SmartFile function

To use the SmartFile function, attach the SmartFile label to the spine of the cassette. If you record a programme on a tape with a SmartFile label, for more than 20 minutes in LP mode and 11 minutes in SP mode, programme data, such as the name, date and channel, is automatically stored in the memory of the SmartFile label. Some stations may not offer this service.

Attaching the SmartFile label to the cassette

To use the SmartFile function, attach the supplied SmartFile label to the cassette. Remove any staines or dirt from the surface of the spine of the tape. Then, holding both edges of the SmartFile label so that it doesn't bend, attach it along the guide line to the spine of the cassette. This tape is henceforth referred to as a SmartFile tape.



Note on the purchase of SmartFile labels

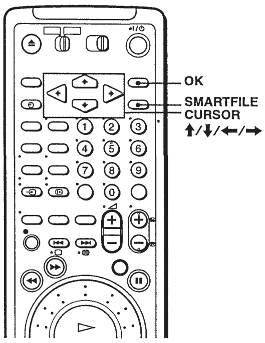
- If you want to order additional SmartFile labels, contact your nearest Sony service facility.

Notes

- The SmartFile label is equipped with a memory chip. The memory chip may be dammaged and cannot be used when you:
  - twist or fold the SmartFile label.
  - remove the SmartFile label and re-attach it to a tape.
  - attach more than one SmartFile label to a tape.
  - attach some metal, or sticker which has metal, to the SmartFile label.
  - write too strongly on the SmartFile label using a ballpoint pen or similar sharp instrument.
  - disassemble or remodel a label.
- Do not leave the SmartFile label in a place subject to excessive dust or dirt, direct sunlight, humidity, mildew, strong magnetism or near heat sources.
- If you attach the SmartFile label to a shorter tape than an E-30, the SmartFile function may not work correctly.

Recording a programme on the SmartFile tape

When recording a programme on the SmartFile tape, no matter what method you use to record the programme (normal recording, showview recording, etc.), programme data (date, name, channel, recording start time , etc.) is stored in the memory of the SmartFile label. The SmartFile label can contain up to 12 programmes' data. When the number of the stored programmes goes over 12, the oldest programme data is erased from the SmartFile list. However, a programme which lasts less than about 20 minutes in LP mode or about 11 minutes in SP mode cannot be stored in the memory. When you record a programme on the SmartFile tape which already contains programme data, see "Recording after locating the Blank Time space" on page 87.

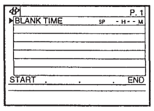


Before you start...

- Turn on your TV and set it to the video channel
- Check that the VCR clock is set to the correct time and date.

1. Insert a SmartFile tape with its safety tab in place.

2. Press SMARTFILE.
   The SmartFile search list appears on the TV screen.



P. 1
BLANK TIME SP - H - - M
START . . . END

3. Use CURSOR ↑/↓ to select BLANKTIME, press OK. The VCR starts searching for the longest blank part of the tape. The SmartFile searchlist disappears.

   You can now start recording a programme.

Tip

- You can protect a recorded programme from accidental over-recording or erasure (see page 102).

Note

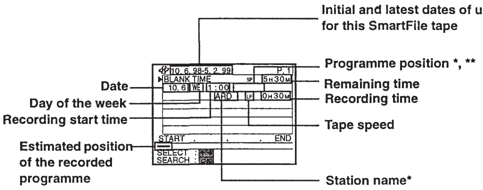
- If you press the PAUSE button one or more times during recording, thereby creating short lengths of recorded time between such pauses, programme data may not be stored in the SmartFile label.

continued

Recording using the SmartFile function (continued)

Checking the information of a recorded programme

Press SMARTFILE. The SmartFile search list appears. The recording day of the week, start time, programme position, date, name, recording time and tape speed appear on the list.The longest space which doesn't have any programme data (Blank Time space) appears as "BLANK TIME":



* When the station name is not available, the programme position is displayed instead.

** If you record a satellite programme using non-timer recording "SAT---" appears in the programme position without displaying any channel number in the "---" position.

Tip

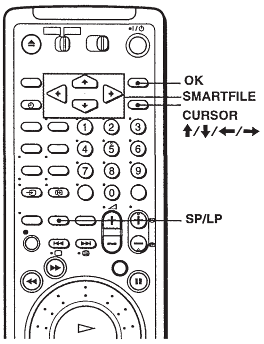
- You can manually name a recorded programme and select the category. You can also name the SmartFile tape

Notes

- If you don't set the clock or the clock isn't set to the correct time and date, the recording start time won't be stored correctly on the Smartfile list. Also the programme label won't be stored correctly if the TV guide page information of the Teletext is not set correctly (see page 84).
- When you set the AUTO LONG PLAY option to ON in the TAPE OPTIONS menu, and the tape speed automatically changes from SP to LP during recording, the VCR displays the entire recording time converted in SP mode to the SmartFile list.
- The recording time length in the SmartFile list is an estimation and may be slightly different from the actual recorded time lenght.

Recording after locating the Blank Time space

The SmartFile function identifies not only the largest amount of available blank space, but also recorded material that doesn't have corresponding programme data stored in the SmartFile label. The longest available recording space (including programmes that are not stored on the SmartFile label) is referred to as "Blank Time space". You can locate the beginning of the Blank Time space for recording. If there is a recorded programme after the Blank Time space, the VCR will over-record on that programme unless you stop recording. If there is a programme you want to prevent from being recorded over or erased, protect that programme before you start recording another programme (see page 102).

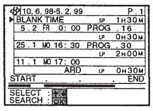


Before you start...

- Turn on your TV and set it to the video channel.

1. Insert a SmartFile tape with its safety tab in place.
   The SMARTFILE indicator lights up on the VCR.

2. Press SMARTFILE.
   The SmartFile search list appears on the TV screen. The Blank Time space appears in the "BLANK TIME" row.
   The Blank Time space also appears in the display window.

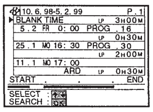


10. 6. 98-5. 2. 99 P. 1
BLANK TIME SP 1H30M
5 . 2 FR 0: 00 PROG . 16
LP 0H30M
25 . 1 MO 16: 30 PROG . 30
LP 2H00M
11 . 1 MO 17: 00
ARD LP 0H30M
START . . . END
SELECT :
SEARCH :

3. Press CURSOR ↑ repeatedly to select BLANK TIME.

4. Press SP/LP to select the tape speed, SP or LP.

   The BLANK TIME changes according to the selected tape speed. Select a tape speed that matches the length of the programme you want to record.



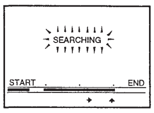
10. 6. 98-5. 2. 99 P. 1
BLANK TIME LP 3H00M
5 . 2 FR 0: 00 PROG . 16
LP 0H30M
25 . 1 MO 16: 30 PROG . 30
LP 2H00M
11 . 1 MO 17: 00
ARD LP 0H30M
START . . . END
SELECT :
SEARCH :

continued

Recording using the SmartFile function (continued)

5 Press OK.

The VCR goes to the beginning of the Blank Time space and stops.

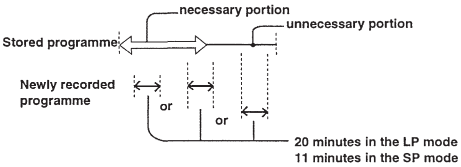


6 Press PROG +/– to select the programme position you want to record.

7 Press ● REC to start recording.

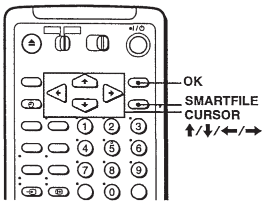
Notes

- You may not be able to locate the beginning of the Blank Time space correctly in the above step 4 when :
  - the SmartFile tape contains one or more short length (less than about 20 minutes in the LP mode and about 11 minutes in the SP mode) recorded programmes of which programme data are not stored in the SmartFile label.
  - the SmartFile tape is damaged or dirty.
  - the SmartFile tape has a portion recorded in the NTSC system.
- If a newly recorded programme overlaps a stored programme, the stored programme information is erased from the SmartFile list as shown below when :
  - the remaining length of the stored programme becomes less than about 20 minutes in the LP mode and about 11 minutes in the SP mode.
  - the stored programme is over-recorded for more than 20 minutes in the LP mode and about 11 minutes in the SP mode.



Selecting and playing a programme

You can automatically locate and start playback of a programme recorded on the SmartFile tape. Select a programme in the SmartFile search list. The SmartFile search list can contain up to 12 programmes.

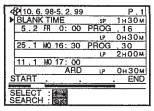


Before you start...

- Turn on your TV and set it to the video channel.

1 Insert a SmartFile tape.
The SMARTFILE indicator lights up on the VCR.

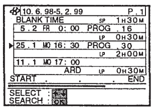
2 Press SMARTFILE.
The SmartFile search list appears on the TV screen.



```
10. 6. 98-5. 2. 99                P . 1
▶BLANK TIME              SP   1H30M
  5 . 2  FR   0: 00  PROG . 16
                         LP   0H30M
 25 . 1  MO 16: 30  PROG . 30
                         LP   2H00M
 11 . 1  MO 17: 00
                ARD      LP   0H30M
START  .        .        .      END
SELECT :
SEARCH :
```

3 Press CURSOR ↑/↓ to select a programme.

Press CURSOR ↑/↓ repeatedly to turn the pages.



```
10. 6. 98-5. 2. 99                P . 1
 BLANK TIME              SP   1H30M
  5 . 2  FR   0: 00  PROG . 16
                         LP   0H30M
▶25 . 1  MO 16: 30  PROG . 30
                         LP   2H00M
 11 . 1  MO 17: 00
                ARD      LP   0H30M
START  .        .        .      END
SELECT :
SEARCH :
```

4 Press OK.

The VCR starts searching for the beginning of the selected programme. Playback starts automatically from that point.

To stop searching

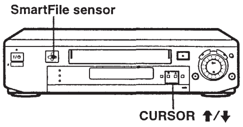
Press ■ STOP.

Note

- You may not be able to locate the beginning of the selected programme correctly when :
  - the SmartFile tape contains one or more short length (less than about 20 minutes in the LP mode and about 11 minutes in SP mode) recorded programmes of which programme data are not stored in the SmartFile label.
  - the SmartFile tape is damaged or dirty.
  - the SmartFile tape has a portion recorded in the NTSC system.

Checking the contents of a tape

You can display the programme data list of a SmartFile tape on the TV screen. It is not necessary to insert the tape into the VCR. This feature allows you to quickly find a specific programme or to find a tape with enough recording space. The SmartFile check list can contain up to 12 programmes.



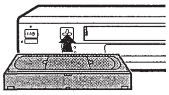
Before you start...

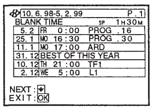
- Turn on your TV and set it to the video channel.
- Turn on your VCR.

1 Hold the label side of the SmartFile tape close to the SmartFile sensor.

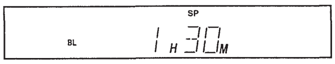
Slowly bring the center of the label within 3 cm of the SmartFile sensor.

There is a short beep, the SMARTFILE indicator lights up on the VCR, and the SmartFile check list appears. The BLANK TIME space also appears in the display window.



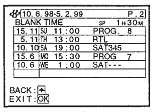


```
10. 6. 98-5. 2. 99              P . 1
BLANK TIME             SP   1H30M
  5. 2 FR   0:00  PROG .16
 25. 1 MO  16:30  PROG .30
 11. 1 MO  17:00  ARD
 31. 12 BEST OF THIS YEAR
 10. 12 TH  21:00  TF1
  2. 12 WE   5:00  L1

NEXT : ↓
EXIT : OK
```



```
        SP
BL         1 H 30 M
```

2 Press CURSOR ↑/↓ to turn the pages.



```
10. 6. 98-5. 2. 99              P . 2
BLANK TIME             SP   1H30M
 15. 11 SU  11:00   PROG.  8
  5. 11 TH  13:00   RTL
 10. 10 SA  19:00   SAT345
 15. 6  MO  15:30   PROG   7
 10. 6  WE   1:00   SAT---

BACK : ↑
EXIT : OK
```

3 Press OK to exit the SmartFile check list.

Tip

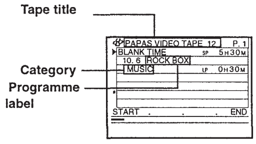
- If you press a button other than SP/LP or CURSOR ↑/↓, the SmartFile check list disappears.

Notes

- You cannot display the SmartFile check list while :
  - you display the SmartFile list of a different SmartFile tape inserted into the VCR.
  - you display any other menu.
- If the SmartFile check list doesn't appear on the TV screen, try again by drawing the SmartFile tape away from the SmarFile sensor at least 5 cm, then bring it back to within 3 cm of the sensor.
- The menu disappears automatically if you don't proceed for more than a few minutes.

Labelling a recorded programme and tape

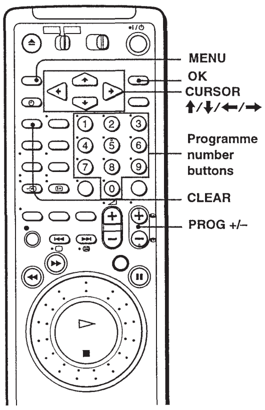
Some Broadcast systems ensure a Teletext service in which the complete programmes and their data (title, date, channel, recording start time etc.) are stored day by day. To each day of the week corresponds a TV guide page number. When recording a programme, the VCR automatically takes the label information from the Teletext pages and stores into the SmartFile label. Those TV guide page numbers depend entirely on the broadcast itself and may be subject to change. If so, you may have to set those TV guide page numbers manually in the TV GUIDE PAGE menu.


Tape title
Category
Programme label
PAPAS VIDEO TAPE 12
P. 1
BLANK TIME
SP 5H30M
10. 6 ROCK BOX
MUSIC
LP 0H30M
START
END

Setting the TV guide page number

Before you start...

Turn on your TV and set it to the video channel.

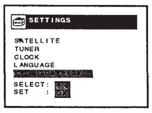

MENU
OK
CURSOR
↑/↓/←/→
Programme number buttons
CLEAR
PROG +/–

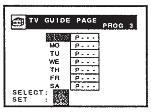
1 Select the programme position for which you want to set or change the TV guide page.

2 Press MENU, then press CURSOR ↑/↓ to highlight SETTINGS and press OK.

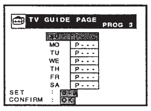
3 Press CURSOR ↑/↓ to highlight TV GUIDE PAGE and press OK.

The TV guide page numbers appear automatically when the VCR detects them.


SETTINGS
SATELLITE
TUNER
CLOCK
LANGUAGE
SELECT :
SET :

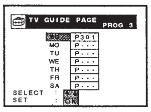

TV GUIDE PAGE
PROG 3
P - - -
MO P - - -
TU P - - -
WE P - - -
TH P - - -
FR P - - -
SA P - - -
SELECT :
SET :

4 Press CURSOR ↑/↓ to select the TV guide page number you want to modify and press OK


TV GUIDE PAGE
PROG 3
MO P - - -
TU P - - -
WE P - - -
TH P - - -
FR P - - -
SA P - - -
SET :
CONFIRM :

5 Press the programme number buttons to enter the TV guide page number and press OK to confirm the setting.

If you make a mistake, press CLEAR to re-enter the correct number.


TV GUIDE PAGE
PROG 3
P301
MO P - - -
TU P - - -
WE P - - -
TH P - - -
FR P - - -
SA P - - -
SELECT :
SET :

6 To set or change another TV guide page number, repeat steps 3 and 4 above.

7 Press MENU to exit the menu.

continued

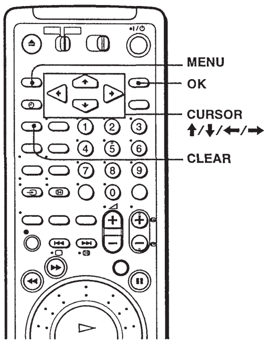
Labelling a recorded programme and tape (continued)

Notes

- In step 4 above, enter "000" if you don't want to use the TV guide page number for automatic labelling. The VCR will then store default data (date, programme position, duration etc.) in the label.
- Refer to the Teletext information on your TV screen to get the TV guide page number with the programme titles and their start times.
- If the Teletext TV guide has a page which always shows the programmes for the current day, this page should be input for all days.
- If you start recording more than two minutes before the programme is scheduled to start, the correct label information may not be transferred. The VCR receives the label information two minutes after the recording starts. This is to assure that the programmes' information is correctly recorded even if you start recording before the programme actually begins.
- If you set a timer recording with VPS/PDC OFF, the title information will be transferred in the middle of the recording.
- Note that this function may not work correctly with programmes broadcast from some stations.
- When the recording starts and if at that moment the Broadcast system updates the Teletext information, the title on the label may not correspond to the one of the recorded programme. In this case, you may have to manually enter the correct title using the SMARTFILE EDIT menu.
- You cannot get the label information from the sources through the LINE input or the satellite channels.

Labelling a recorded programme manually

If Teletext data is not available, label and select the appropriate category of the recorded programme manually. Labelling manually takes priority over labelling automatically. You can also label the tape. Up to 18 characters can be input for a programme and tape label.


MENU
OK
CURSOR
↑/↓/←/→
CLEAR

Before you start...

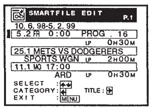
- Turn on your TV and set it to the video channel.

1 Insert a SmartFile tape.

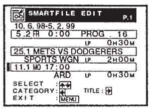
The SMARTFILE indicator lights up on the VCR.

2 Press MENU and select SMARTFILE EDIT, then press OK.

The SMARTFILE EDIT menu appears.


SMARTFILE EDIT
P.1
10. 6. 98-5. 2. 99
5 .2 FR 0:00 PROG . 16
LP 0H30M
25.1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11.1 MO 17:00
ARD LP 0H30M
SELECT :
CATEGORY :
TITLE :
EXIT : MENU

3 Press CURSOR ↑/↓ to select a programme.

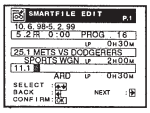

SMARTFILE EDIT
P.1
10. 6. 98-5. 2. 99
5 .2 FR 0:00 PROG . 16
LP 0H30M
25.1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11.1 MO 17:00
ARD LP 0H30M
SELECT :
CATEGORY :
TITLE :
EXIT : MENU

continued

Labelling a recorded programme and tape (continued)

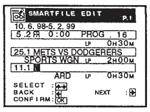
4 Press CURSOR →.

The cursor moves to the programme label input position.


SMARTFILE EDIT P.1
10. 6. 98-5. 2. 99
5 .2 FR 0:00 PROG . 16
LP 0H30M
25.1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11.1
ARD LP 0H30M
SELECT :
BACK :
CONFIRM : OK
NEXT :

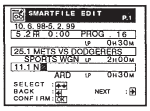
5 Label the programme.

1 Press CURSOR ↑/↓ to select a character.
Each time you press CURSOR ↑, the character changes as shown below.
A→ B→ ... → Z → special characters → ! →& →, (comma) → - (hyphen) → . (period) → 0 → 1 ... →9 →(blank space)
You can also select a blank space by pressing CLEAR.

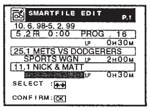

SMARTFILE EDIT P.1
10. 6. 98-5. 2. 99
5 .2 FR 0:00 PROG . 16
LP 0H30M
25.1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11.1
ARD LP 0H30M
SELECT :
BACK :
CONFIRM : OK
NEXT :

2 To set the next character, press CURSOR →.
The cursor moves to the next position.

3 Repeat steps 1 and 2 to label the programme.


SMARTFILE EDIT P.1
10. 6. 98-5. 2. 99
5 .2 FR 0:00 PROG . 16
LP 0H30M
25.1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11.1 N
ARD LP 0H30M
SELECT :
BACK :
CONFIRM : OK
NEXT :

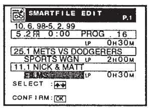
6 Press OK.


SMARTFILE EDIT P.1
10. 6. 98-5. 2. 99
5 .2 FR 0:00 PROG . 16
LP 0H30M
25.1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11.1 NICK & MATT
LP 0H30M
SELECT :
CONFIRM : OK

7 Press CURSOR ↑/↓ to select a category.

Each time you press CURSOR ↑, the category changes as shown below.

SPECIAL → FILMS → NEWS → SHOW SPORTS → CHILDRE (children) → MUSIC→ ARTS → SERIES → EDU. (education) → LEISURE → SHOPPIN (shopping) → VARIETY → (blank)


SMARTFILE EDIT P.1
10. 6. 98-5. 2. 99
5 .2 FR 0:00 PROG . 16
LP 0H30M
25.1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11.1 NICK & MATT
FILMS LP 0H30M
SELECT :
CONFIRM : OK

8 Press OK.

The programme label and a selected category are stored.

9 Press MENU to exit the menu.

To erase the programme label

Press CLEAR after step 3 above. The programme label is erased and the default recording data reappear.

To erase the selected category

Press CLEAR in step 7 above. The selected category is erased and the space becomes blank.

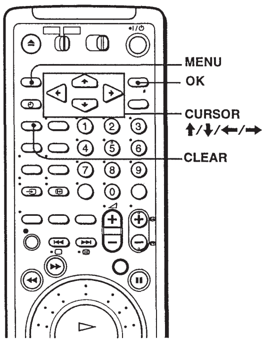
To label a regularly scheduled timer-recorded programme

Once you label a programme which is set to record regularly (i.e everyday, same day of the week, etc.) in the ShowView system or timer recording mode, the VCR recognizes the label and will automatically label all future recordings of the same programme. The set label is assigned even when an information signal containing the programme name, category name or other information is broadcast with the programme. However, if you change the programme label and the category several times, the VCR may automatically label only the last programme of which the programme label and category are changed.

continued

Labelling a recorded programme and tape (continued)

Labelling a tape


MENU
OK
CURSOR
↑/↓/←/→
CLEAR

Before you start...

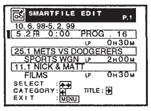
- Turn on your TV and set it to the video channel.

1 Insert a SmartFile tape.

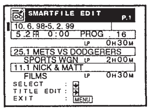
The SMARTFILE indicator lights up on the VCR.

2 Press MENU and select SMARTFILE EDIT, then press OK.

The SMARTFILE EDIT menu appears.

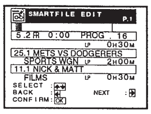

SMARTFILE EDIT P.1
10. 6. 98-5. 2. 99
5 .2 FR 0:00 PROG . 16
LP 0H30M
25.1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11.1 NICK & MATT
FILMS LP 0H30M
SELECT :
CATEGORY :
EXIT : MENU
TITLE :

3 Press CURSOR ↑ to select the tape title.


SMARTFILE EDIT P.1
10. 6. 98-5. 2. 99
5 .2 FR 0:00 PROG . 16
LP 0H30M
25.1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11.1 NICK & MATT
FILMS LP 0H30M
SELECT :
TITLE EDIT :
EXIT : MENU

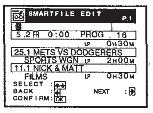
4 Press CURSOR →.

The cursor moves to the title input position.


SMARTFILE EDIT P.1
5 .2 FR 0:00 PROG . 16
LP 0H30M
25.1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11.1 NICK & MATT
FILMS LP 0H30M
SELECT :
BACK :
CONFIRM : OK
NEXT :

5 Label the tape.

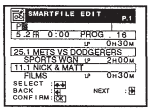
1 Press CURSOR ↑/↓ to select a character.
Each time you press CURSOR ↑, the character changes as shown below.
A→ B→ ... → Z → special characters → ! →& →, (comma) → - (hyphen) → . (period) → 0 → 1 ... →9 →(blank space)


SMARTFILE EDIT P.1
5 .2 FR 0:00 PROG . 16
LP 0H30M
25.1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11.1 NICK & MATT
FILMS LP 0H30M
SELECT :
BACK :
CONFIRM : OK
NEXT :

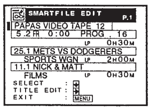
You can also select a blank space by pressing CLEAR.

2 To set the next character, press CURSOR →.
The cursor moves to the next position.

3 Repeat steps 1 and 2 to label the tape.


SMARTFILE EDIT P.1
P
5 .2 FR 0:00 PROG . 16
LP 0H30M
25.1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11.1 NICK & MATT
FILMS LP 0H30M
SELECT :
BACK :
CONFIRM : OK
NEXT :

6 Press OK.
The tape title is stored.

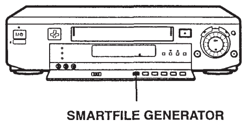

SMARTFILE EDIT P.1
PAPAS VIDEO TAPE 12
5 .2 FR 0:00 PROG . 16
LP 0H30M
25.1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11.1 NICK & MATT
FILMS LP 0H30M
SELECT :
TITLE EDIT :
EXIT : MENU

7 Press MENU to exit the menu.

To erase the tape title

Press CLEAR after step 3 above. The tape title is erased and the recording date reappears. When you want to erase the recording date from the tape title column, press CLEAR again.

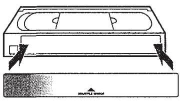
Registering the contents of a recorded tape in the SmartFile label



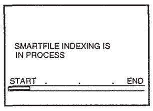
The VCR will register programmes recorded on a tape (even a non-SmartFile recorded tape) in the memory of a new SmartFile label by detecting the index signals indicating the start of recorded programmes. You can register up to the 12th programme from the start of the tape. The programmes appear from the bottom of the screen as PROGRAM NO. 1, PROGRAM NO.2, ... PROGRAM NO.12 in the order. The 13th and subsequent programmes are ignored. You can manually name the registered programme numbers and select the category (see page 92).

Before you start...

- Turn on your TV and set it to the video channel.
- Turn on your VCR.



1 Attach the SmartFile label to the spine of the cassette as shown on the right and insert the tape.


SMARTFILE INDEXING IS
IN PROCESS
START . . . END

2 Press the SMARTFILE GENERATOR button on the VCR.

A message appears indicating that the recorded programmes are being registered. The index signals are detected from the start of the tape, and the registration stops if the end of the tape is reached. The message disappears when registration is complete.

To stop registration to the SmartFile label

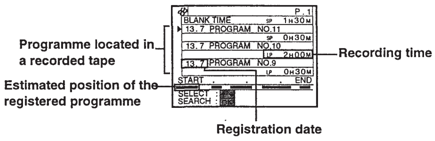
Press SMARTFILE GENERATOR.

The data registered before the button is pressed remains in the SmartFile label. You can register the programmes again by pressing SMARTFILE GENERATOR.

To check the information of a registered programme

Press SMARTFILE.

The SmartFile search list appears. The registered programme number, registration date and recording time appear in this list. Note that the registration date differs from the recorded date.


Programme located in a recorded tape
Estimated position of the registered programme
Recording time
Registration date
SELECT :
SEARCH :

P . 1
BLANK TIME SP 1H30M
13 . 7 PROGRAM NO.11
SP 0H30M
13 . 7 PROGRAM NO.10
LP 2H00M
13 . 7 PROGRAM NO.9
LP 0H30M
START . . . END

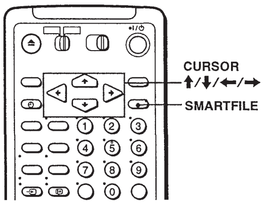
Tips

- The programmes recorded on the tape can be registered again in a SmartFile label that already contains programme data. However, the recorded date and time, programme name and information input manually (such as the programme label and category) are replaced with "PROGRAM NO. XX".
- If the SmartFile label contains stored programme data that includes protected programmes, a message appears and the registration stops.

Notes

- Programme data is not registered correctly in the SmartFile label when :
  - – the programme length is about 20 minutes or less in LP mode or about 11 minutes in SP mode.
  - – the programme does not have an index signal or the index signal has been recorded over and erased.
  - – the tape is damaged or dirty.
- If you don't set the clock or the clock isn't set to the correct date, the registration date won't be stored correctly on the SmartFile list.
- After you press SMARTFILE GENERATOR and start registration, registration is interrupted if you press ■ STOP, ▷ PLAY, ▶▶ FF, ◀◀ REW, I/⏻ or ⏮/⏭ INDEX SEARCH. In these cases as well, the data registered up to the point when registration was interrupted remains in the SmartFile label.
- When you set AUTO LONG PLAY to ON in the TAPE OPTIONS menu, and the tape speed automatically changes from SP to LP during recording, the VCR displays the entire recording time converted in SP mode to the SmartFile list.
- The estimated position of the registered programmes may not be correct in case of many short programmes recorded on long tapes.

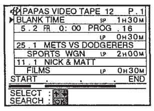
Protecting a recorded programme



You can protect a recorded programme using the SmartFile function from accidental over-recording or erasure. When you start recording from a position prior to the protected programme, the recording stops automatically before the protected programme.

Before you start...

- Turn on your TV and set it to the video channel.

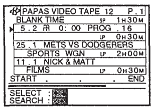

PAPAS VIDEO TAPE 12 P . 1
BLANK TIME SP 1H30M
5 . 2 FR 0: 00 PROG . 16
LP 0H30M
25 . 1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11 . 1 NICK & MATT
FILMS LP 0H30M
START . . . END
SELECT :
SEARCH :

1 Insert a SmartFile tape.

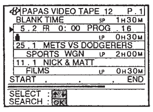
The SMARTFILE indicator lights up on the VCR.

2 Press SMARTFILE.

The SmartFile search list appears on the TV screen.


PAPAS VIDEO TAPE 12 P . 1
BLANK TIME SP 1H30M
5 . 2 FR 0: 00 PROG . 16
LP 0H30M
25 . 1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11 . 1 NICK & MATT
FILMS LP 0H30M
START . . . END
SELECT :
SEARCH :

3 Press CURSOR ↑/↓ to select the programme you want to protect.


PAPAS VIDEO TAPE 12 P . 1
BLANK TIME SP 1H30M
5 . 2 FR 0: 00 PROG . 16
LP 0H30M
25 . 1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11 . 1 NICK & MATT
FILMS LP 0H30M
START . . . END
SELECT :
SEARCH :

4 Press CURSOR→.

The indicator appears to the left of the selected programme and the programme is now protected.

5 Press SMARTFILE.

The SmartFile search list disappears.

To unlock the protected programme

Press CURSOR← in the step 4 above. The indicator disappears and you can record over this programme.

Tips

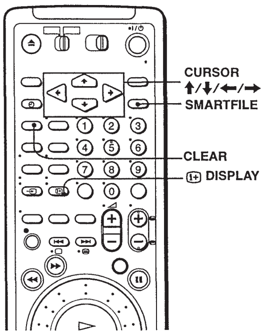
- When you start recording from a position prior to the protected programme, the recording automatically stops no more than about four minutes in SP mode and about eight minutes in LP mode before the beginning of the protected programme. The BLANK TIME indicator flashes in the display window.
- If you protect a programme just after the Blank Time space, BLANK TIME becomes shortened by about four minutes in SP mode and about eight minutes in LP mode.
- If you try to record on a SmartFile tape containing a protected programme, a message indicating that there is a protected programme on this tape appears on the TV screen.

Notes

- When you record another programme just after a protected programme, locate the beginning of the Blank Time space by following the instructions in "Recording after locating the Blank Time space" on page 87. Otherwise, if the recording start point overlaps the protected programme, the VCR may over-record the protected programme.
- If you insert a SmartFile tape which contains a protected programme or protect a programme for the first time on a new tape, the VCR will analyse the position of the protected programme for a few seconds. You cannot operate the VCR while the VCR is analysing the tape.
- If the SmartFile list contains 12 protected programmes, the next programme you record won't be stored in the SmartFile list.
- When you try to turn off the VCR after setting a ShowView timer recording on the protected programme, the VCR automatically ejects the cassette.
- The protecting function may not work with an NTSC-recorded tape.

Erasing the data of an unwanted programme

You can erase an unwanted programme from the SmartFile list.
When you erase a programme from the list, that portion of tape is subject to Blank Time space priority.

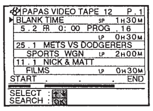


Before you start…

- Turn on your TV and set it to the video channel.

1 Insert a SmartFile tape.

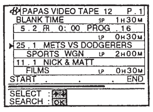
The SMARTFILE indicator lights up on the VCR.



```
 PAPAS VIDEO TAPE  12      P . 1
▶BLANK TIME              SP  1H30M
  5 . 2  FR  0: 00  PROG . 16
                         LP  0H30M
 25 . 1  METS VS DODGERERS
    SPORTS  WGN          LP  2H00M
 11 . 1  NICK & MATT
    FILMS                LP  0H30M
 START  .        .       .     END
 SELECT :
 SEARCH : OK
```

2 Press SMARTFILE.
The SmartFile search list appears on the TV screen.

3 Press CURSOR ↑/↓ to select a programme you want to erase from the list.

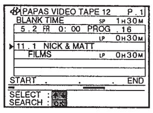


```
 PAPAS VIDEO TAPE  12      P . 1
 BLANK TIME              SP  1H30M
  5 . 2  FR  0: 00  PROG . 16
                         LP  0H30M
▶25 . 1  METS VS DODGERERS
    SPORTS  WGN          LP  2H00M
 11 . 1  NICK & MATT
    FILMS                LP  0H30M
 START  .        .       .     END
 SELECT :
 SEARCH : OK
```

4 Press CLEAR.

The selected programme is erased from the SmartFile list.

If you erase a programme by mistake, press DISPLAY to make the programme reappear.



```
 PAPAS VIDEO TAPE 12       P . 1
 BLANK TIME              SP  1H30M
  5 . 2  FR  0: 00  PROG . 16
                         LP  0H30M
▶11 . 1  NICK & MATT
     FILMS               LP  0H30M


 START  .        .       .     END
 SELECT :
 SEARCH :
```

5 Press SMARTFILE.

The SmartFile search list disappears.

Notes

- You cannot erase a protected programme from the SmartFile list. You have to first unlock the protected programme by following the instructions in "To unlock the protected programme" on page 103, then erase that programme from the list.
- The erased programme disppears from the SmartFile list, but it still remains on the tape.
- If a programme is left about 11 minutes or less in SP mode or about 20 minutes or less in LP mode, you cannot make the programme reappear by using the DISPLAY button.

Troubleshooting

If you have any questions or if your problems are not covered below, please consult your nearest Sony service facility.

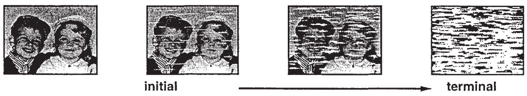
Problem summary

The following table summarizes the reference numbers for the problems you might face. In order to solve your problem, please refer to the corresponding reference (S1=symptom1, S2=symptom2 ...) in the right column below.

Category		Refer to
Picture	• while watching broadcast tuned by the TV.	S2, S6
	• while watching broadcast tuned by the VCR.	S1, S6
	• while playing a tape.	S3, S4, S5
Sound	• while playing a tape.	S7, S8, S9
Functional	• Playback	S4, S9, S10
	• Normal recording	S11, S12
	• SmartFile	S13, S14
	• Timer recording	S15, S16
	• Canal Plus	S17, S18, S19
	• Line selection	S20
	• Remote commander	S21, S22
	• Cleaning	S23
	• Clock	S24
	• Power	S25, S26, S27, S28, S29
	• Tape	S30, S31
	• SMARTLINK	S32
	• Satellite tuner control	S33, S34

	Picture	
S1	The VCR picture does not appear on the TV screen.	→ Make sure the TV is set to the video channel. If you are using a monitor, set it to video input. → If the VCR is connected to the TV with the EURO-AV cable, make sure the TV/VIDEO indicator is lit in the display window. Use the TV/VIDEO key on the remote commander to lit the TV/VIDEO indicator. → If the VCR is connected to the TV only with the aerial cable, make sure that RF MODULATOR is set to ON in the OTHER OPTIONS menu (see page 77).
S2	The TV programme is not clear or has some interference.	→ If your TV is connected to the VCR with both EURO-AV and aerial cables, make sure the RF MODULATOR is set to OFF in the OTHER OPTIONS menu (see page 77). → Existing broadcasts may interfere with the VCR. Reset the RF MODULATOR output of your VCR.
S3	The playback picture is not clear or has some interference.	→ If your TV is connected to the VCR with both EURO-AV and aerial cables, make sure the RF MODULATOR is set to OFF in the OTHER OPTIONS menu (see page 77). → Existing broadcasts may interfere with the VCR. Reset the RF MODULATOR output of your VCR. → Adjust the tracking with the TRACKING +/– buttons (see page 73). → The video heads are dirty (see below). Clean the video heads using the Sony T-25CLD, E-25CLDR, or T-25CLW video head cleaning cassette. If these cleaning cassettes are not available in your area, have the heads cleaned at your nearest Sony service facility (a standard service charge will be required). Do not use a commercially available liquid type cleaning cassette other than Sony's, as it may damage the video heads. The video heads may have to be replaced. Consult your local Sony service facility for more information.

Symptoms caused by contaminated video heads



• Normal picture • Rough picture Unclear picture • No picture (or black & white screen appears)

continued

Troubleshooting (continued)

	Picture		
S4	The tracking meter does not appear on the TV screen.	→ →	The recording condition of the tape is very poor and tracking can not be ajusted. The display does not appear when the tape you are playing is recorded in NTSC.
S5	The picture rolls vertically during picture search.	→	Adjust the vertical hold control on the TV or monitor.
S6	TV reception is poor.	→ →	Make sure the aerial cables are connected securely. Adjust the TV aerial.
	Sound		
S7	The picture has no sound.	→	The tape is defective. Please use a new tape.
S8	The sound is unstable or has an echo.	→	When you play a tape with the same sound recorded on both the hi-fi and normal sound tracks, make sure AUDIO MIX in the AUDIO OPTIONS menu is set to OFF (see page 76).
S9	You cannot select the left or the right channel while playing a tape	→ →	Make sure AUDIO MIX is set to OFF in the AUDIO OPTIONS menu (see page 76). Make sure you are playing a hi-fi tape.
	Playback		
S10	The tape starts playing as soon as it is inserted.	→	This is normal. When you insert a tape which safety tab has been removed, the VCR starts playing automatically.
	Normal recording		
S11	The tape is ejected when you press ● REC.	→	The safety tab has been removed. To record on this tape, cover the tab hole (see page 54).
S12	Nothing happens when you press ● REC.	→ →	Make sure the tape is not at its end. If the BL indicator is flashing in the display window, the tape contains a programme protected by the SmartFile function (see page 102).
	SmartFile		
S13	The programme label cannot be taken properly.	→ → → →	Make sure the clock and the date are set correctly. Check the setting of the TV guide pages. Some stations may not offer this service (see page 92). If you start recording more than two minutes before the beginning of the programme, the title on the label may not correspond to the one of the recorded programme. Enter manually the correct title using the SMARTFILE EDIT menu (see page 95). If the TV reception is poor, the VCR will not be able to take the title correctly. Enter manually the correct title using the SMARTFILE EDIT menu (see page 95).

	SmartFile		
S14	Recording stops halfway.	→	If the tape contains a programme protected by the SmartFile function, recording automatically stops before the protected programme. Use another tape which has enough recording space.
	Timer recording		
S15	The timer does not operate properly.	→ → → → → → → → →	Check that the clock is set. The clock stops if the VCR is disconnected from the mains for more than an hour. Reset the clock and the timer. Check that the safety tab has not been removed. If the timer recording overlaps a programme protected by the SmartFile function, the recording stops halfway (see page 102). The recording start point overlaps the protected programme. Make sure the tape is not at its end. Make sure a tape has been inserted. Make sure the current time has not already passed your timer settings . If you are recording a programme from a satellite tuner, make sure the satellite tuner is turned on.
S16	The VPS/PDC function does not operate properly.	→ → →	Check that the clock and the date are set correctly. Check that the VPS/PDC time you set is the correct one (there might be a mistake in the TV guide programme). If the Broadcast you wanted to record did not send the good VPS/PDC information, the VCR will not start recording. If the reception is poor, the VPS/PDC signal might be altered and the VCR might not start recording.
	Canal Plus		
S17	You cannot set channels as PAY-TV/CANAL+ in the TUNER menu.	→	Be sure that DECODER/LINE4 is set to DEC. in OTHER OPTIONS menu (see page 77).
S18	You cannot watch Canal Plus when the VCR is in standby mode.	→ →	Be sure that DECODER/LINE4 is set to DEC. in OTHER OPTIONS menu (see page 77). Make sure the Canal Plus EURO-AV cable is plugged securely.
S19	PAY-TV/Canal Plus is always recorded scrambled.	→ → →	Make sure the Canal Plus EURO-AV cable is set securely. Be sure that DECODER/LINE4 is set to DEC. in OTHER OPTIONS menu (see page 77). Be sure that this channel is set as PAY-TV/CANAL+ in TUNER menu (see page 44).
	Line selection		
S20	You cannot select LINE4.	→	Be sure that DECODER/LINE4 is set to LINE4 in OTHER OPTIONS menu (see page 77).

continued

Troubleshooting (continued)

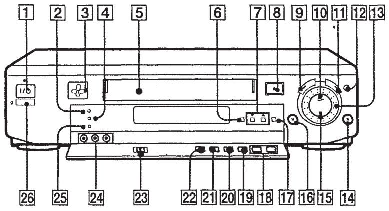
	Remote commander		
S21	The remote commander does not operate.	→ → → →	Make sure you are pointing the remote commander at the remote sensor on the VCR. Replace all the batteries in the remote commander by new ones if they are weak. Make sure the TV/VIDEO remote control switch is set correctly. Make sure the COMMAND MODE switch position of the VCR matches to the remote commander's one.
S22	You cannot control your TV.	→	Set your TV's code number. The code number may change when you replace the batteries of the remote commander (see page 9).
	Cleaning		
S23	The VCR needs to be cleaned.	→	Clean the cabinet, panel and controls with a dry, soft cloth, or a soft cloth slightly moistened with a mild detergent solution. Do not use any type of solvent, such as alcohol or benzene.
	Clock		
S24	The clock has stopped and "–:– –" lights in the display window.	→	The clock stops if the VCR is disconnected from the mains for more than one hour. Reset the clock and timer if needed (see page 22).
	Power		
S25	The I/⏻ ON/STANDBY switch does not function.	→	Connect the mains lead to the mains securely
S26	The power is turned on but the VCR does not operate.	→	Moisture condensation occurs. Turn the power off, unplug the mains lead and leave the VCR to dry for over three hours.
S27	The tape is ejected when you press I/⏻ ON/STANDBY.	→	You have set a timer recording, but the tape on which you want to record is protected (or contains protected recordings). Unlock the protection or use another tape or replace the safety tab (see page 103).
S28	The display does not lit when the VCR is in STANDBY mode.	→	The VCR is in power save mode. Set the POWER SAVE option to OFF in the OTHER OPTIONS menu (see page 77).
S29	POWER SAVE is set to ON but the display remains lit in STANDBY mode.	→	The display is always lit if the VCR is in timer standby mode. For more details regarding the energy saving, see page 77.

	Tape		
S30	The tape is ejected when you press I/⏻ ON/STANDBY.	→	You have set a timer recording, but the tape on which you want to record is protected (or contains protected recordings). Unlock the protection or use another tape or replace the safety tab (see page 103).
S31	A tape cannot be inserted.	→	Check that a tape isn't already in the tape compartment.
	SMARTLINK		
S32	The SMARTLINK function does not work properly.	→ → →	Check that your TV complies with SMARTLINK, NexTView Link, MEGALOGIC, EASYLINK, Q-Link or EURO VIEW LINK. Make sure you use the EURO-AV cable, supplied with the VCR, to connect the VCR and your TV. Make sure the EURO-AV cable is connected securely.
	Satellite tuner control		
S33	The Satellite Control function does not work properly.	→ → → →	Be sure to point the VCR remote commander only at the VCR's remote sensor and not at the satellite sensor. Be sure the Satellite controller is pointing at the Satellite Tuner's remote sensor receiver. Make sure the Satellite controller is connected securely. The Satellite tuner brand number may be deleted if you disconnect it from the VCR. Re-enter the Brand code number corresponding to your satellite tuner (see page 29).
S34	You cannot watch the satellite tuner picture when the VCR is in standby mode or ● REC standby mode.	→ →	Be sure that the DECODER/LINE-4 is set to LINE4- in OTHER OPTIONS menu (see page 77). Make sure the POWER SAVE option is set to OFF in the OTHER OPTIONS menu (see page 77).

Index to parts and controls

Refer to the pages indicated in parentheses ( ) for details.

Front panel



1 I/⏻ ON/STANDBY button/indicator (6)

2 SMARTFILE indicator (90)

3 SMARTFILE sensor (90)

4 REALITY REGENERATOR (RR) indicator (73)

5 Tape compartment

6 SMARTFILE button

7 CURSOR ↑/↓ buttons (90)

8 ⏏ EJECT button (50)

9 ◀◀ REW (rewind) button (50)

10 ▷ PLAY button (50)

11 ▶▶ FF (fast-forward) button (50)

12 JOG button/indicator (64)

13 CLICK JOG SHUTTLE ring (64)

14 ● REC (record) button (52), (79)

15 ■ STOP button (50)

16 ❚❚ PAUSE button (50)

17 OK button

18 PROGRAM/TRACKING +/– buttons (17), (19), (73)

19 DIGITAL NOISE REDUCTION button (74)

20 REALITY REGENERATOR button (73)

21 AUTO SET UP (19)/ RF (Radio Frequency) CHANNEL button (17)

22 SMARTFILE GENERATOR button

23 COMMAND MODE Switch (7)

24 LINE-2 IN VIDEO/AUDIO L/R jacks (78)

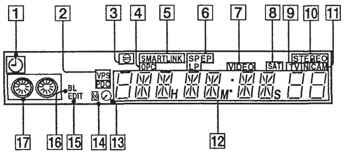
25 DIGITAL NOISE REDUCTION (DNR) indicator (74)

26 Remote sensor (5)

continued

Index to parts and controls (continued)

Display window



1 Timer indicator (56), (61)

2 VPS (Video Programme System)/PDC (Programme Delivery Control) indicator (59)

3 Audio Dubbing indicator (80)

4 OPC (Optimum Picture Control) indicator (73)

5 SMARTLINK indicator (13)

6 Tape speed indicators (53)

7 VIDEO indicator (53)

8 SAT indicator (53)

9 TV indicator (55)

10 STEREO indicator (70)

11 NICAM indicator (SLV-SF99NP only) (70)

12 Time counter/clock/line/programme position indicator (17), (50), (53)

13 Remaining time indicator (54)

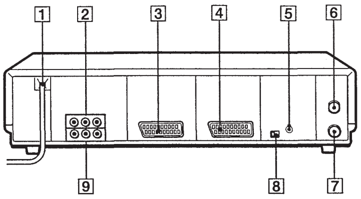
14 Tracking indicator (73)

15 EDIT indicator (79)

16 BL (Blank Time space) indicator (90)

17 Tape/recording indicator (53)

Rear panel



1 Mains lead (11), (14)

2 LINE-3 IN
AUDIO L/R/VIDEO
ENTREE LIGNE-3
AUDIO G/D/VIDEO

3 ⊖ LINE-1 (TV)
⊖ LIGNE-1 (TV) connector (11), (44)

4 DECODER/⊸ LINE-4 IN
DECODEUR/⊸ ENTREE LIGNE-4 connector (44)

5 SAT CONTROL
CONTROLLEUR SAT jack (15)

6 AERIAL IN
ANTENNE ENTREE connector (11), (14)

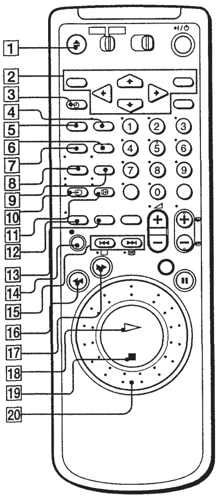
7 AERIAL OUT
ANTENNE SORTIE connector (11), (14)

8 NTSC PB (Play Back) switch (49)

9 LINE-2 OUT
AUDIO L(left)/R (right)/VIDEO
SORTIE LIGNE-2
AUDIO G/D/VIDEO (16)

continued

Remote commander



1 ⏏ EJECT button (50)

2 Menu buttons (6)

MENU button
CURSOR ↑/↓/←/→ buttons
OK button

3 ◴ TIMER button (56), (61)

4 AUDIO MONITOR button (6), (70)

5 CLEAR button (49), (56), (68)

6 AUDIO DUB button* (80)

7 COUNTER/REMAIN button* (54)

8 Fastext button*

9 Fastext button*

10 ⊸ TV/VIDEO button (6)

11 ⊕ DISPLAY button (54)

12 WIDE button (*for TV*) (7)

13 SP (Standard Play)/LP (Long Play) button (52)

14 ● REC (record) button (52), (67), (79)

15 ⏮/⏭ INDEX SEARCH buttons (72)
▢ TV power on/TV mode select button (for TV) (7)
▤ (Teletext) button (*for TV*) (7)

16 ◀◀ REW (rewind) button (50), (64)

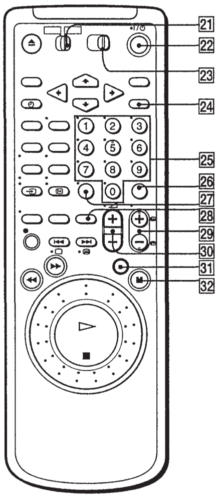
17 ▶▶ FF (fast-forward) button (50), (64)

18 ▷ PLAY button (50), (64)

19 ■ STOP button (50), (67)

20 Shuttle ring (64)

* FASTEXT buttons (*for TV*)


21
22
23
24
25
26
27
28
29
30
31
32
1
2
3
4
5
6
7
8
9
0

21 TV /VIDEO remote control switch (5)

22 I/⏻ (on/standby) button (6), (61)

23 COMMAND MODE Switch (7)

24 SMARTFILE button (85)

25 Programme number buttons (6), (27)

26 SAT button (27)

27 –/– –(ten's digit) button (6), (54)

28 INPUT SELECT button (53), (61)

29 PROG (programme) +/– buttons (6), (35) (53)
≡▲/≡▼ Teletext page access buttons (*for TV*) (7)

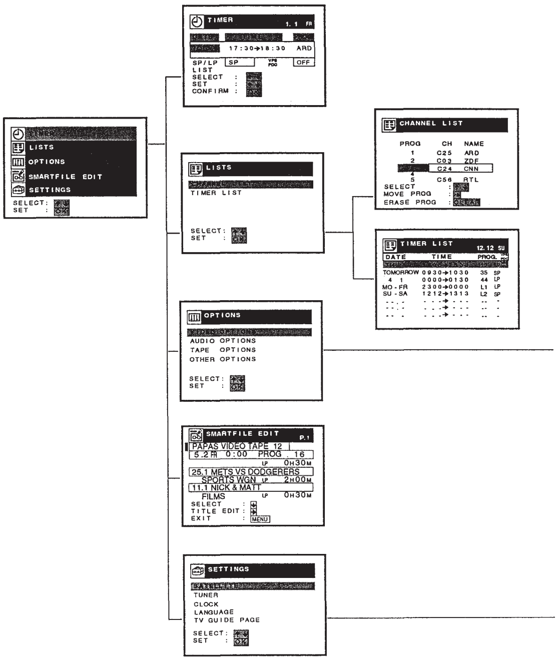
30 ◿ (volume) +/– buttons (*for TV*) (6)

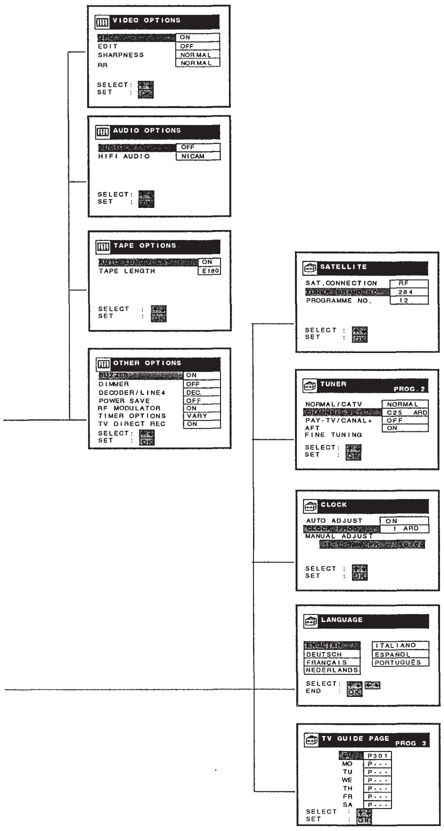
31 JOG button (64)

32 ❚❚ PAUSE button (50), (65)

Menu chart

This VCR is equipped with an on-screen indication system which allows you a visual, quick and easy selection of the different menus. For a total view of all the menus, please refer to the following chart.

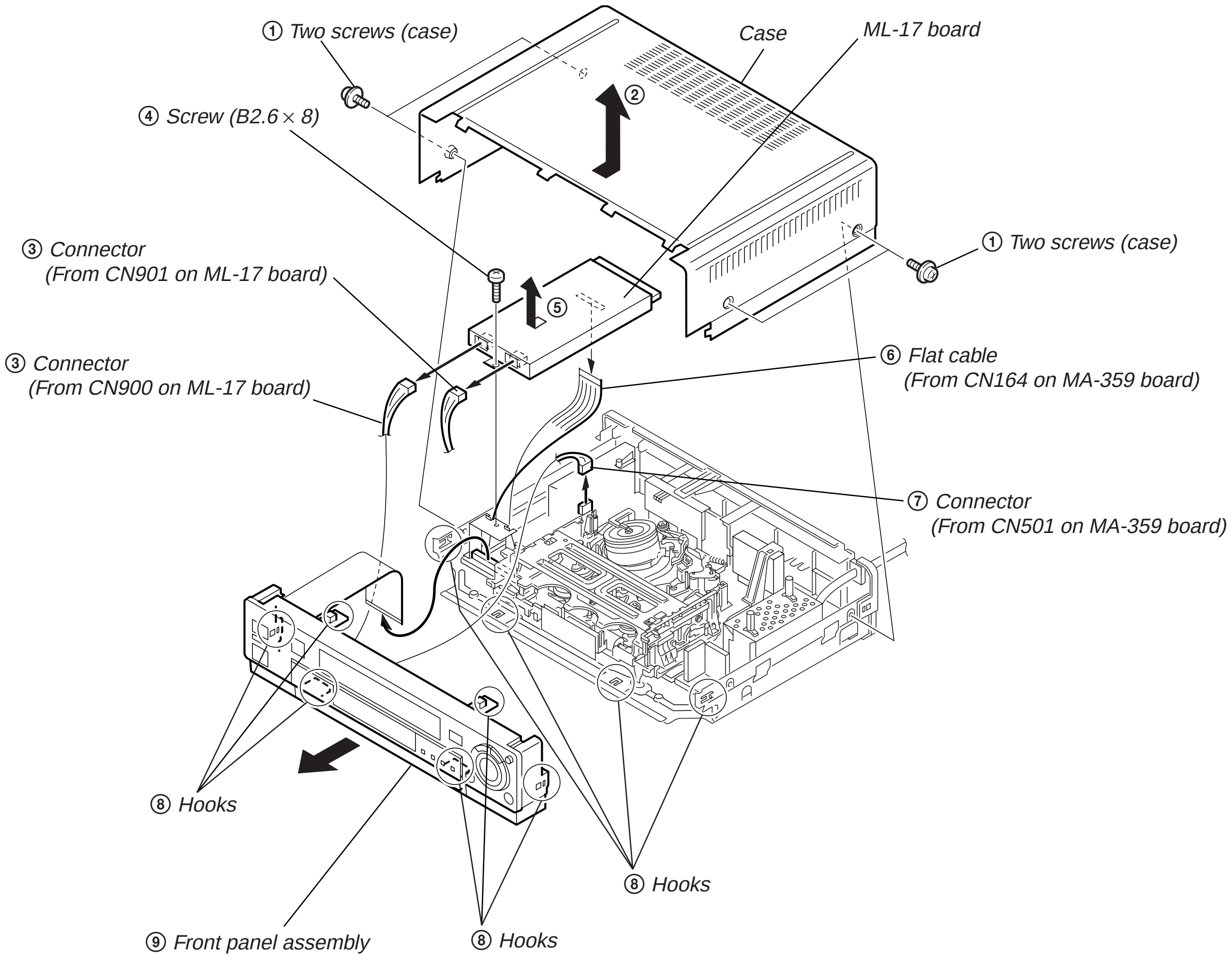

LISTS
OPTIONS
SMARTFILE EDIT
SETTINGS
SELECT:
SET :
TIMER 1. 1 FR
17:30→18:30 ARD
SP/LP SP
VPS PDC OFF
LIST
SELECT :
SET :
CONFIRM :
LISTS
TIMER LIST
SELECT:
SET :
CHANNEL LIST
PROG CH NAME
1 C25 ARD
2 C03 ZDF
C24 CNN
4
5 C56 RTL
SELECT :
MOVE PROG :
ERASE PROG :
TIMER LIST 12.12 SU
DATE TIME PROG.
TOMORROW 0930→1030 35 SP
4 1 0000→0130 44 LP
MO - FR 2300→0000 L1 LP
SU - SA 1212→1313 L2 SP
OPTIONS
AUDIO OPTIONS
TAPE OPTIONS
OTHER OPTIONS
SELECT:
SET :
SMARTFILE EDIT P.1
PAPAS VIDEO TAPE 12
5.2 FR 0:00 PROG . 16
LP 0H30M
25.1 METS VS DODGERERS
SPORTS WGN LP 2H00M
11.1 NICK & MATT
FILMS LP 0H30M
SELECT :
TITLE EDIT :
EXIT : MENU
SETTINGS
TUNER
CLOCK
LANGUAGE
TV GUIDE PAGE
SELECT:
SET :


VIDEO OPTIONS
ON
EDIT OFF
SHARPNESS NORMAL
RR NORMAL
SELECT:
SET :
AUDIO OPTIONS
OFF
HIFI AUDIO NICAM
SELECT:
SET :
TAPE OPTIONS
ON
TAPE LENGTH E180
SELECT :
SET :
OTHER OPTIONS
ON
DIMMER OFF
DECODER/LINE4 DEC.
POWER SAVE OFF
RF MODULATOR ON
TIMER OPTIONS VARY
TV DIRECT REC ON
SELECT:
SET :
SATELLITE
SAT.CONNECTION RF
284
PROGRAMME NO. 12
SELECT :
SET :
TUNER PROG. 2
NORMAL/CATV NORMAL
C25 ARD
PAY-TV/CANAL+ OFF
AFT ON
FINE TUNING
SELECT:
SET :
CLOCK
AUTO ADJUST ON
1 ARD
MANUAL ADJUST
SELECT :
SET :
LANGUAGE
DEUTSCH
FRANCAIS
NEDERLANDS
ITALIANO
ESPAÑOL
PORTUGUÊS
SELECT:
END :
TV GUIDE PAGE PROG 3
P301
MO P---
TU P---
WE P---
TH P---
FR P---
SA P---
SELECT :
SET :

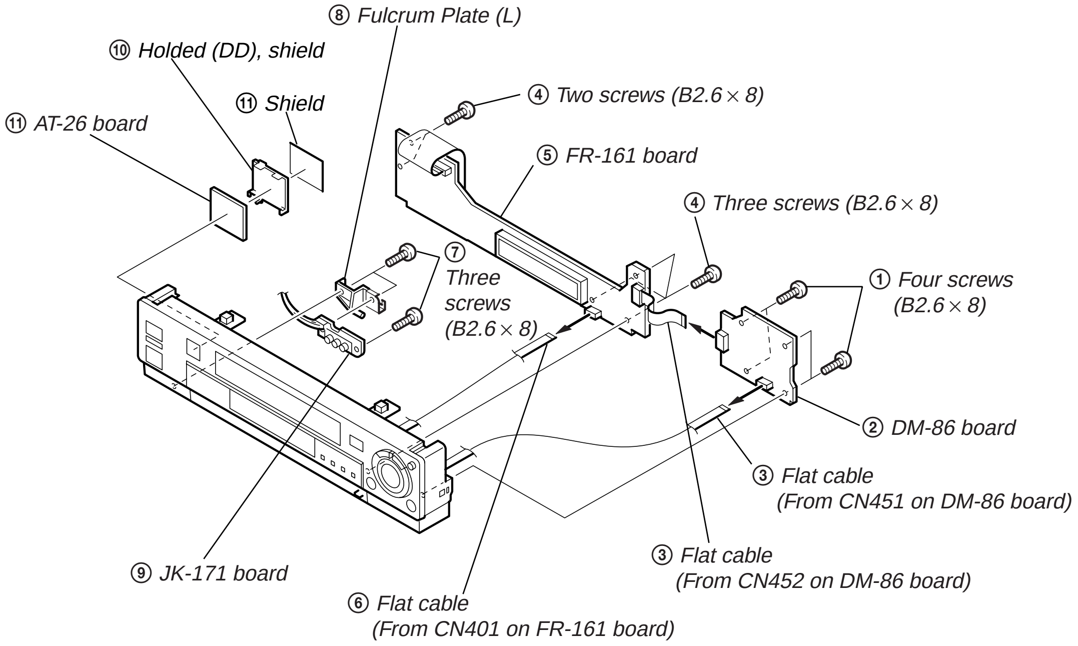
SECTION 2
DISASSEMBLY

NOTE: Follow the disassembly procedure in the numerical order given.

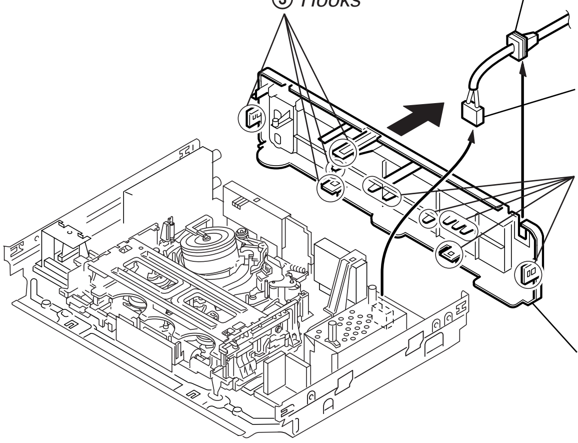
2-1. CASE, FRONT PANEL BLOCK ASSEMBLY


① Two screws (case)
Case
ML-17 board
②
④ Screw (B2.6 × 8)
③ Connector
(From CN901 on ML-17 board)
① Two screws (case)
⑤
③ Connector
(From CN900 on ML-17 board)
⑥ Flat cable
(From CN164 on MA-359 board)
⑦ Connector
(From CN501 on MA-359 board)
⑧ Hooks
⑧ Hooks
⑨ Front panel assembly
⑧ Hooks

2-2. DM-86, FR-161, JK-171, AT-26 BOARDS


⑧ Fulcrum Plate (L)
⑩ Holded (DD), shield
⑪ Shield
⑪ AT-26 board
④ Two screws (B2.6 × 8)
⑤ FR-161 board
④ Three screws (B2.6 × 8)
⑦
Three
screws
(B2.6 × 8)
① Four screws
(B2.6 × 8)
② DM-86 board
③ Flat cable
(From CN451 on DM-86 board)
③ Flat cable
(From CN452 on DM-86 board)
⑨ JK-171 board
⑥ Flat cable
(From CN401 on FR-161 board)

2-3. REAR PANEL



② *Release cable stopper from rear panel*

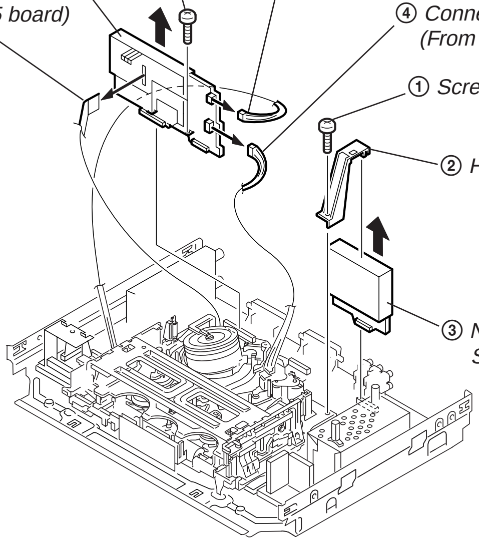
③ *Hooks*

① *Connector (From CN101 on POWER BLOCK)*

③ *Hooks*

④ *Rear panel*

2-4. NR-27, RP-235 BOARDS



⑤ *Two screws (B3)*

⑥ *RP-235 board*

④ *Connector (From CN301 on RP-235 board)*

④ *Flat cable (From CN260 on RP-235 board)*

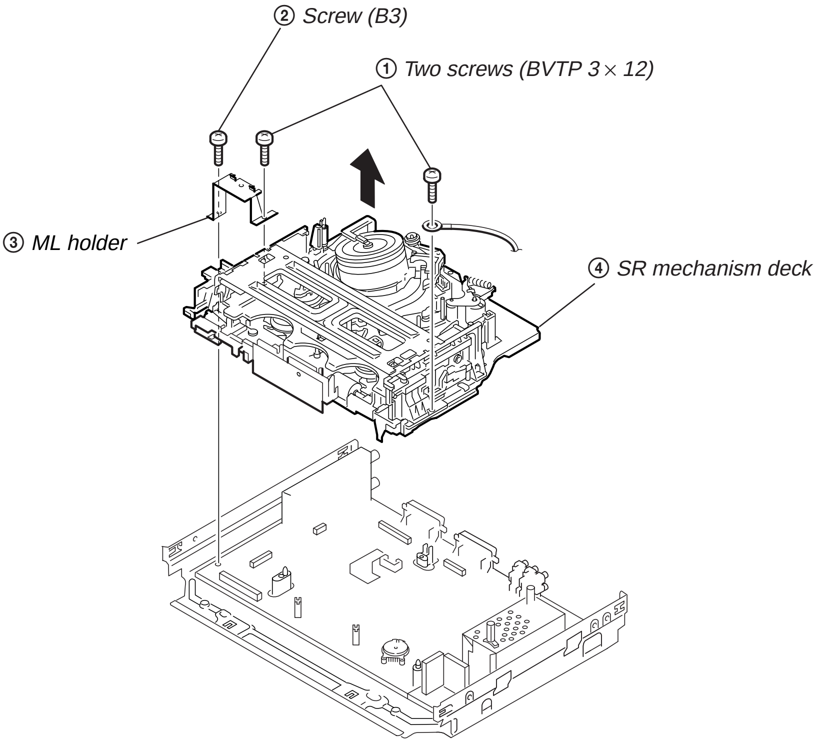
④ *Connector (From CN324 on RP-235 board)*

① *Screw (+HEXA TP SW3 × 8)*

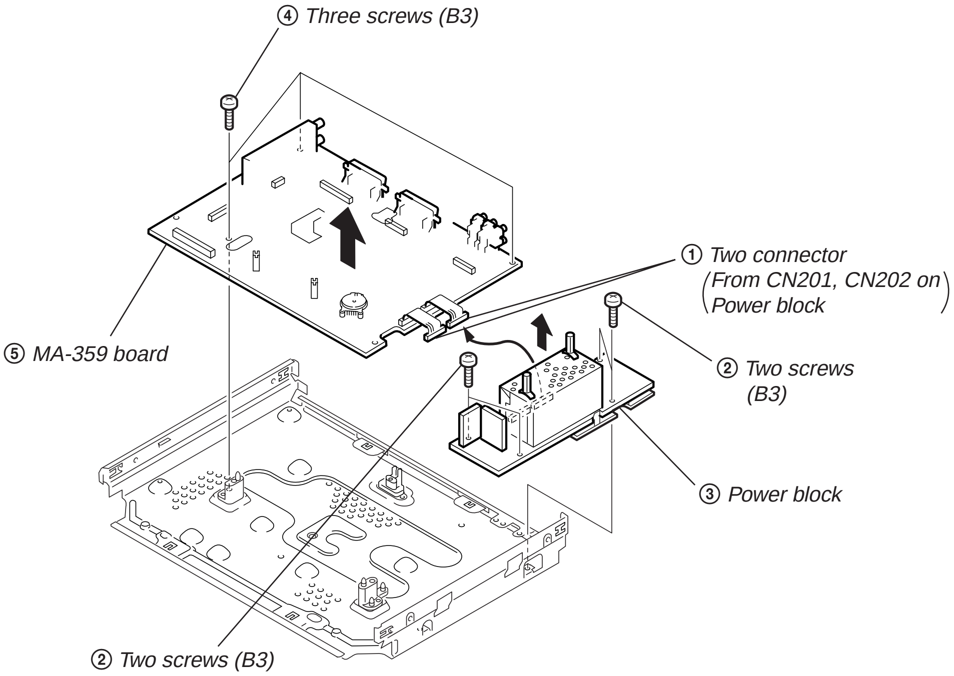
② *Holder*

③ *NR-27 board (SF99:UX,EN,NP,VC)*
SE-90 board (SE85:B/SF90:B/SF99:B)

2-5. SR MECHANISM DECK

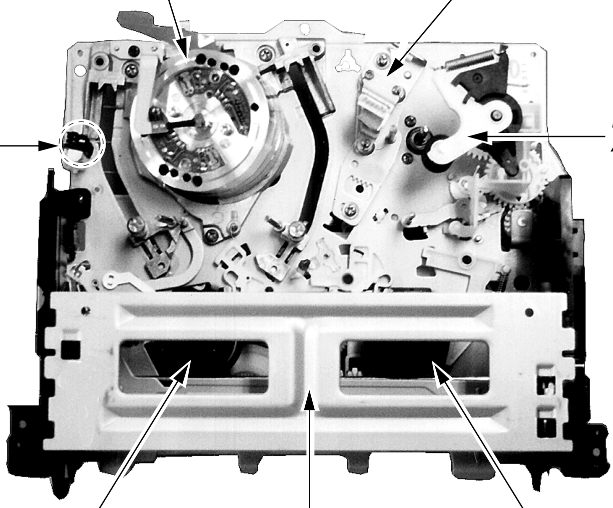

② Screw (B3)
① Two screws (BVTP 3 × 12)
③ ML holder
④ SR mechanism deck

2-6. POWER BLOCK, MA-359 BOARDS


④ Three screws (B3)
① Two connector
(From CN201, CN202 on Power block)
② Two screws (B3)
⑤ MA-359 board
③ Power block
② Two screws (B3)

2-7. INTERNAL VIEWS

— Top View —



M901
Drum Assembly
DZH-86A-R: 1-759-373-22 (SE85:NP,VC,UX/SF90:NP,VC,UX,EX/SF99:UX,EN,NP,VC)
DZH-98A-R: 1-759-557-22 (SE85:B/SF90:B/SF99:B)

ACE head block assembly
A-6775-052-A

FE head
1-500-144-11

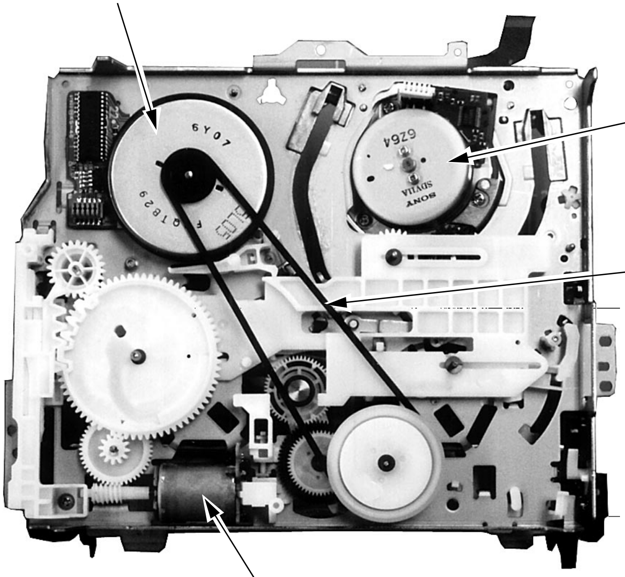
Pinch press block assembly
A-6759-615-A

FL complete assembly
A-6759-619-B

Reel (S) table
3-977-507-01

Reel (T) table
3-977-508-01

— Bottom View —



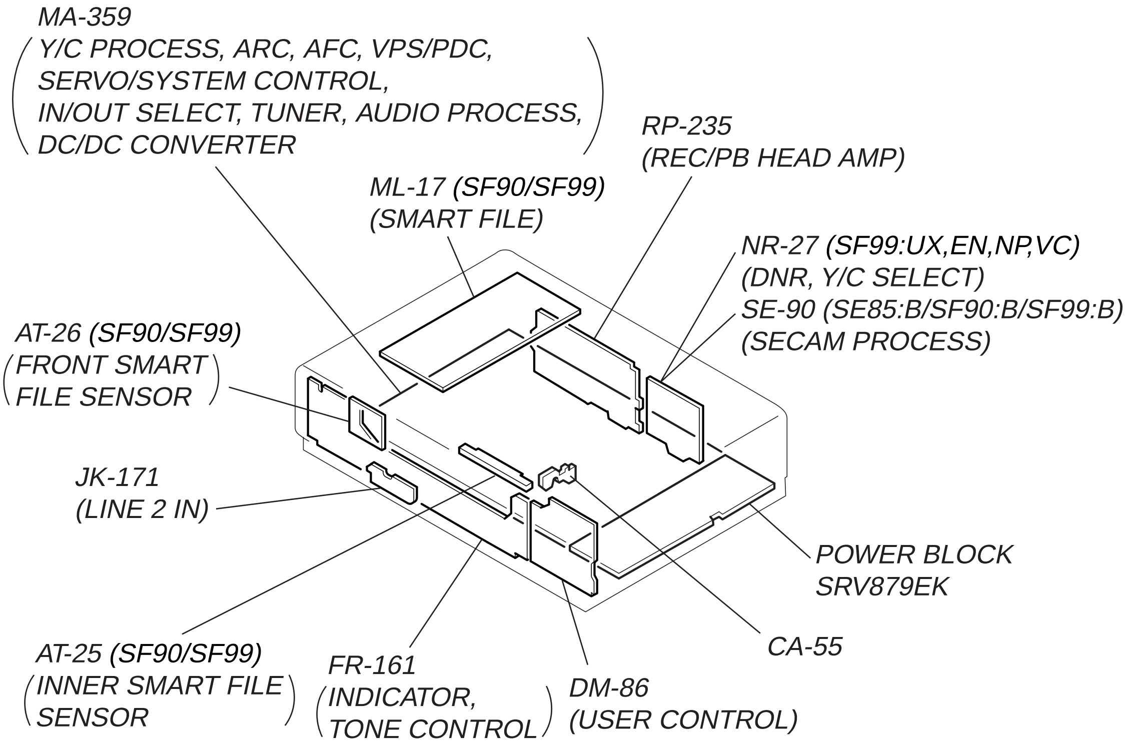
M902
DC motor (capstan)
1-698-971-11

M901
Drum Assembly
DZH-86A-R: 1-759-373-22
(SE85:NP,VC,UX/SF90:NP,VC,UX,EX/
SF99:UX,EN,NP,VC)
DZH-98A-R: 1-759-557-22
(SE85:B/SF90:B/SF99:B)

Rubber belt
3-977-510-01

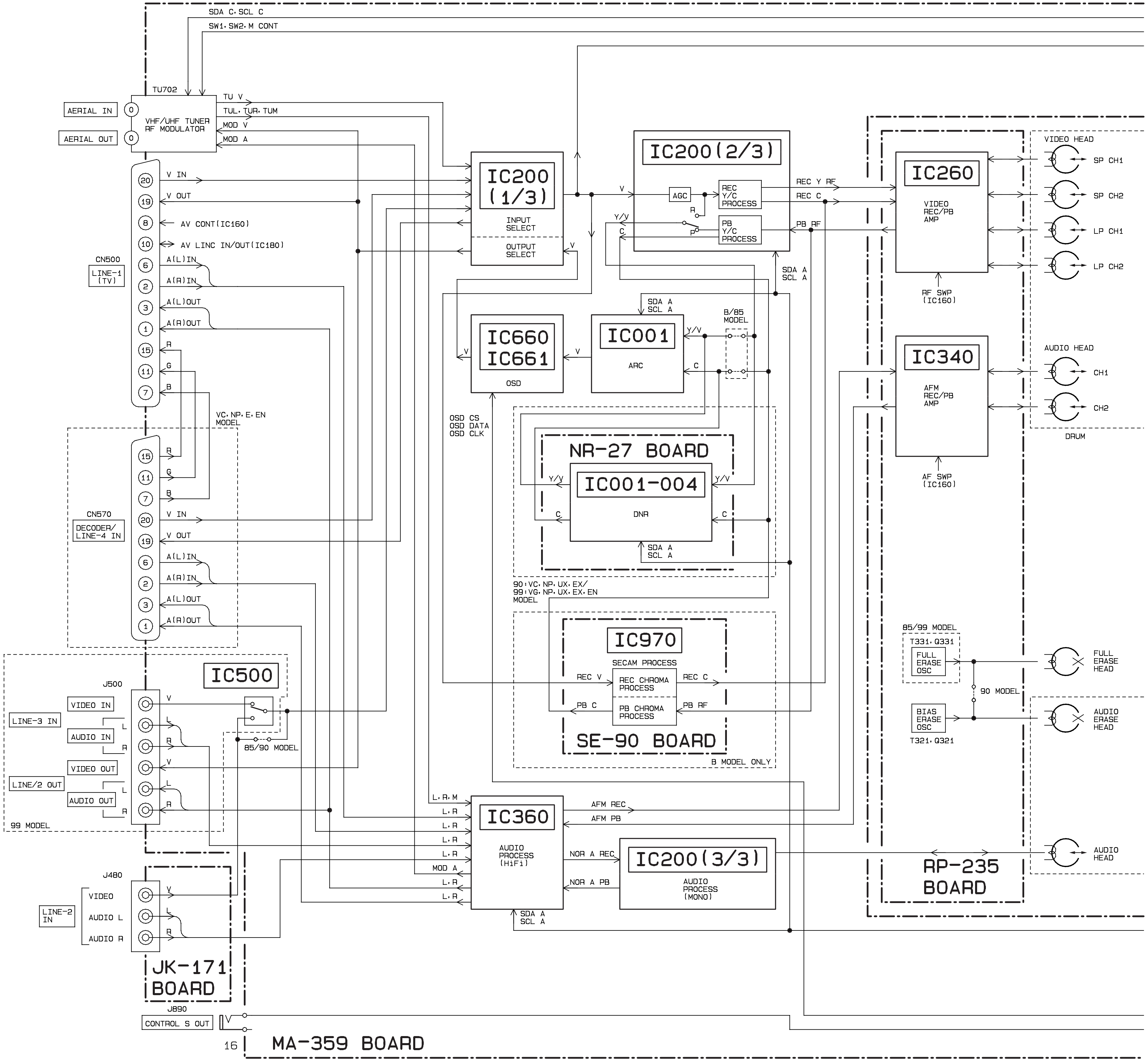
M903
Loading motor assembly
X-3947-577-1

2-8. CIRCUIT BOARDS LOCATION

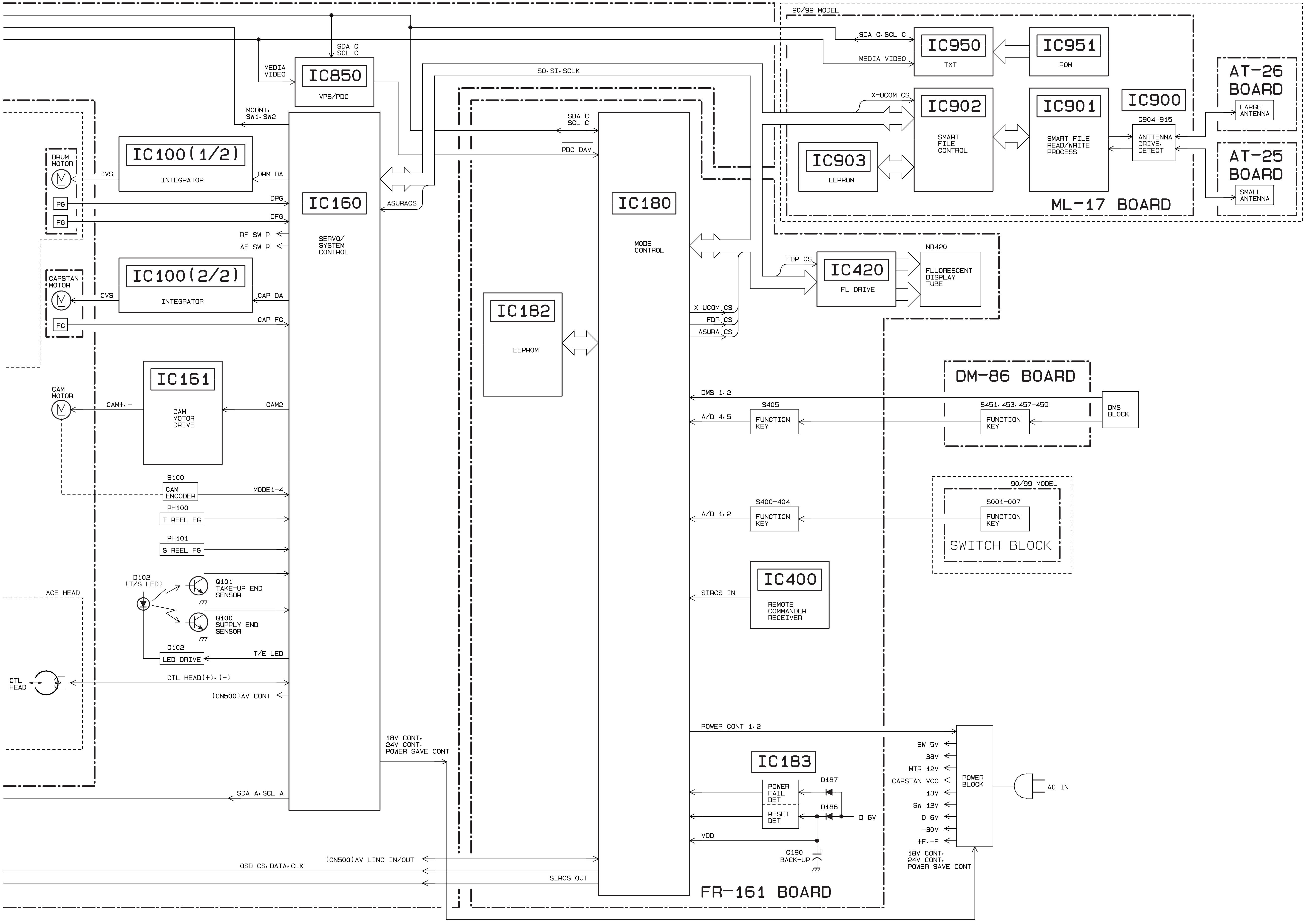

MA-359
(Y/C PROCESS, ARC, AFC, VPS/PDC, SERVO/SYSTEM CONTROL, IN/OUT SELECT, TUNER, AUDIO PROCESS, DC/DC CONVERTER)
RP-235
(REC/PB HEAD AMP)
ML-17 (SF90/SF99)
(SMART FILE)
NR-27 (SF99:UX,EN,NP,VC)
(DNR, Y/C SELECT)
SE-90 (SE85:B/SF90:B/SF99:B)
(SECAM PROCESS)
AT-26 (SF90/SF99)
(FRONT SMART FILE SENSOR)
JK-171
(LINE 2 IN)
POWER BLOCK
SRV879EK
CA-55
AT-25 (SF90/SF99)
(INNER SMART FILE SENSOR)
FR-161
(INDICATOR, TONE CONTROL)
DM-86
(USER CONTROL)

SECTION 3
BLOCK DIAGRAMS

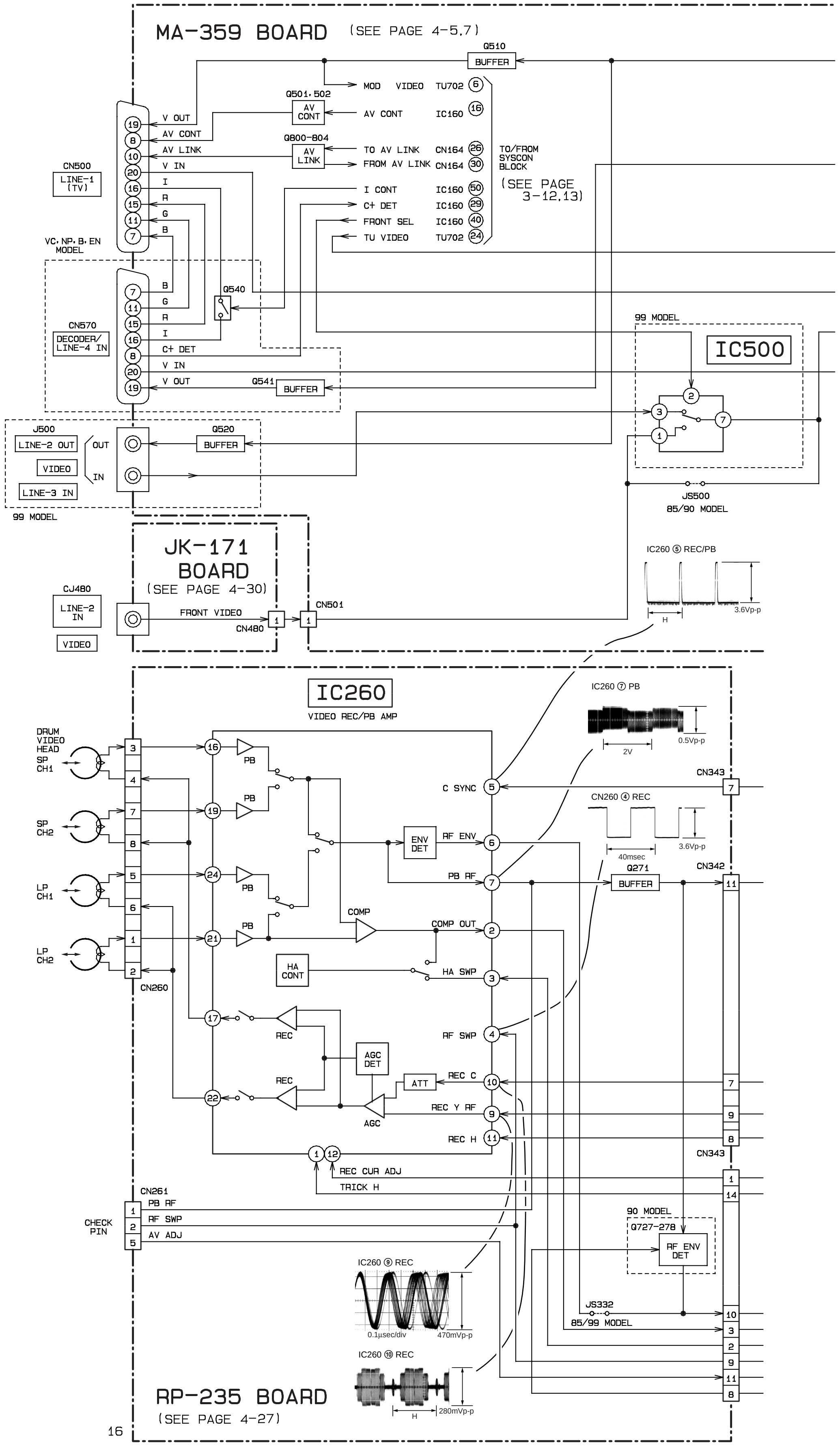
3-1. OVERALL BLOCK DIAGRAM (1)


SDA C・SCL C
SW1・SW2・M CONT
TU702
VHF/UHF TUNER
RF MODULATOR
AERIAL IN
AERIAL OUT
TU V
TUL・TUR・TUM
MOD V
MOD A
CN500
LINE-1 (TV)
V IN
V OUT
AV CONT(IC160)
AV LINC IN/OUT(IC180)
A(L)IN
A(R)IN
A(L)OUT
A(R)OUT
R
G
B
VC・NP・E・EN MODEL
CN570
DECODER/ LINE-4 IN
IC200 (1/3)
INPUT SELECT
OUTPUT SELECT
IC200(2/3)
AGC
REC Y/C PROCESS
PB Y/C PROCESS
REC Y RF
REC C
PB RF
SDA A
SCL A
IC660 IC661
OSD
IC001
ARC
B/B5 MODEL
OSD CS
OSD DATA
OSD CLK
NR-27 BOARD
IC001-004
DNR
90:VC・NP・UX・EX/
99:VG・NP・UX・EX・EN
MODEL
IC970
SECAM PROCESS
REC CHROMA PROCESS
PB CHROMA PROCESS
REC V
PB C
PB RF
SE-90 BOARD
B MODEL ONLY
IC260
VIDEO REC/PB AMP
RF SWP (IC160)
IC340
AFM REC/PB AMP
AF SWP (IC160)
VIDEO HEAD
SP CH1
SP CH2
LP CH1
LP CH2
AUDIO HEAD
CH1
CH2
DRUM
85/99 MODEL
T331・Q331
FULL ERASE OSC
90 MODEL
BIAS ERASE OSC
T321・Q321
FULL ERASE HEAD
AUDIO ERASE HEAD
AUDIO HEAD
RP-235 BOARD
IC500
J500
VIDEO IN
LINE-3 IN
AUDIO IN
VIDEO OUT
LINE/2 OUT
AUDIO OUT
85/90 MODEL
99 MODEL
IC360
AUDIO PROCESS (HiFi)
L・R・M
L・R
MOD A
AFM REC
AFM PB
NOR A REC
NOR A PB
IC200(3/3)
AUDIO PROCESS (MONO)
J480
LINE-2 IN
VIDEO
AUDIO L
AUDIO R
JK-171 BOARD
J890
CONTROL S OUT
16
MA-359 BOARD

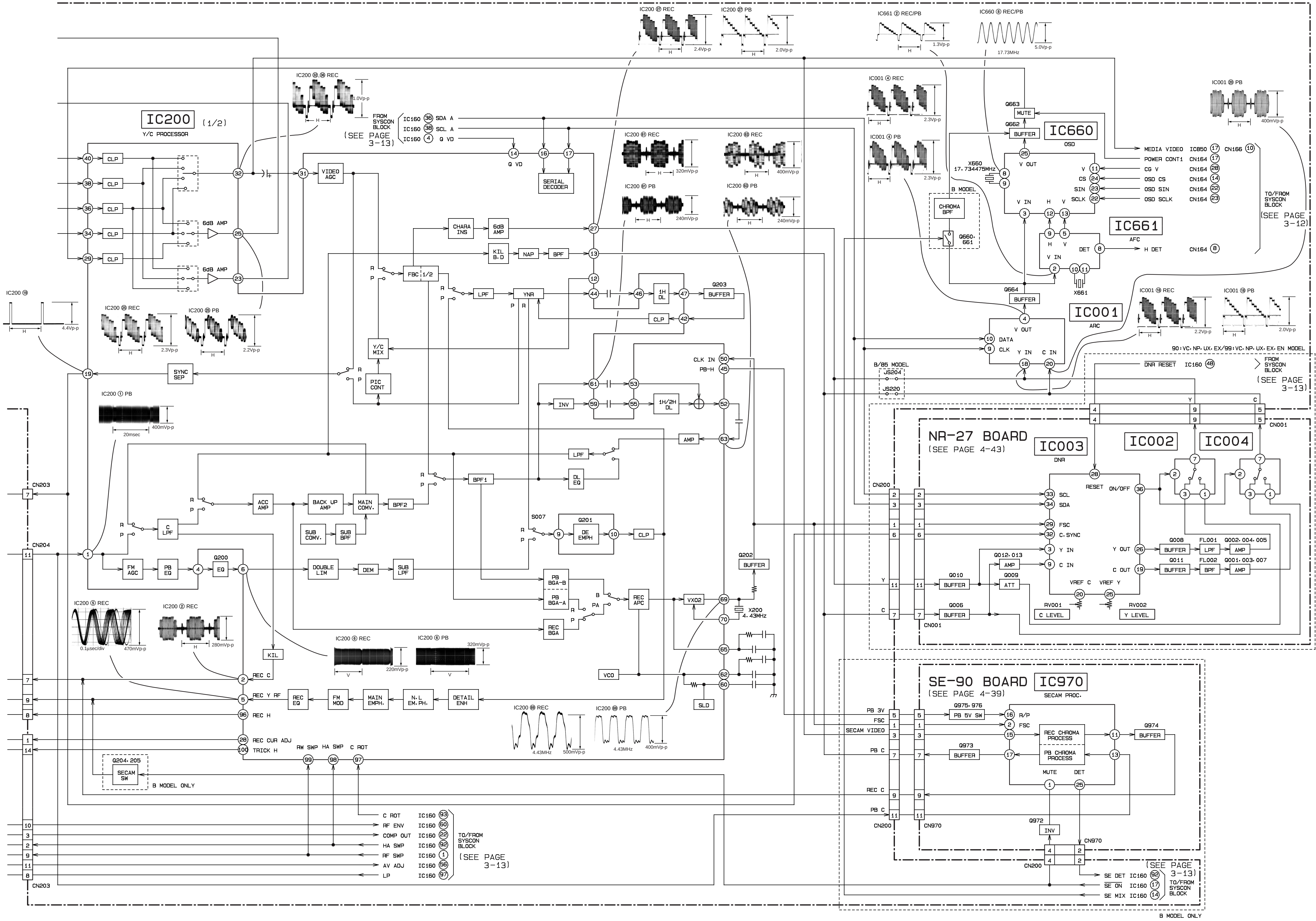
OVERALL BLOCK DIAGRAM (2)


90/99 MODEL
SDA C, SCL C
MEDIA VIDEO
IC950
TXT
IC951
ROM
X-UCOM CS
IC902
SMART FILE CONTROL
IC901
SMART FILE READ/WRITE PROCESS
IC900
Q904-915
ANTTENNA DRIVE, DETECT
IC903
EEPROM
ML-17 BOARD
AT-26 BOARD
LARGE ANTENNA
AT-25 BOARD
SMALL ANTENNA
SDA C
SCL C
MEDIA VIDEO
IC850
VPS/PDC
SO, SI, SCLK
MCONT, SW1, SW2
SDA C
SCL C
PDC DAV
DRUM MOTOR
PG
FG
DVS
IC100(1/2)
INTEGRATOR
DRM DA
DPG
DFG
RF SW P
AF SW P
IC160
SERVO/ SYSTEM CONTROL
ASURACS
IC180
MODE CONTROL
FDP CS
IC420
FL DRIVE
ND420
FLUORESCENT DISPLAY TUBE
CAPSTAN MOTOR
FG
CVS
IC100(2/2)
INTEGRATOR
CAP DA
CAP FG
IC182
EEPROM
X-UCOM CS
FDP CS
ASURA CS
CAM MOTOR
CAM+, -
IC161
CAM MOTOR DRIVE
CAM2
DM-86 BOARD
DMS 1, 2
DMS BLOCK
S405
A/D 4, 5
FUNCTION KEY
S451, 453, 457-459
FUNCTION KEY
S100
CAM ENCODER
MODE1-4
PH100
T REEL FG
PH101
S REEL FG
90/99 MODEL
S400-404
A/D 1, 2
FUNCTION KEY
S001-007
FUNCTION KEY
SWITCH BLOCK
D102 (T/S LED)
Q101 TAKE-UP END SENSOR
Q100 SUPPLY END SENSOR
ACE HEAD
SIRCS IN
IC400
REMOTE COMMANDER RECEIVER
Q102
LED DRIVE
T/E LED
CTL HEAD
CTL HEAD(+), (-)
(CN500)AV CONT
POWER CONT 1, 2
18V CONT, 24V CONT, POWER SAVE CONT
IC183
POWER FAIL DET
RESET DET
D187
D186
D 6V
SW 5V
38V
MTR 12V
CAPSTAN VCC
13V
SW 12V
D 6V
-30V
+F, -F
POWER BLOCK
AC IN
SDA A, SCL A
VDD
C190 BACK-UP
18V CONT, 24V CONT, POWER SAVE CONT
(CN500)AV LINC IN/OUT
OSD CS, DATA, CLK
SIRCS OUT
FR-161 BOARD

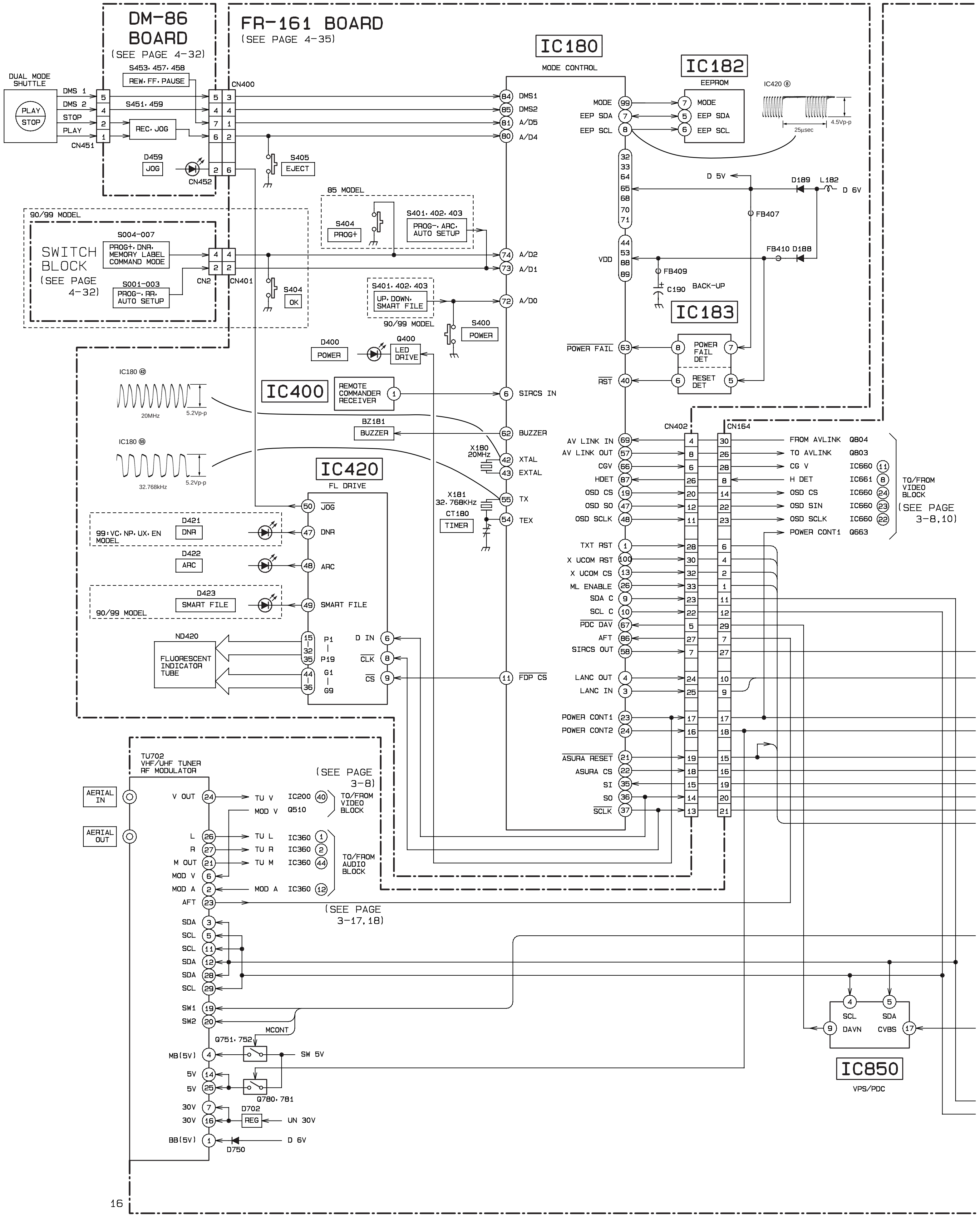
3-2. VIDEO BLOCK DIAGRAM (1)


MA-359 BOARD (SEE PAGE 4-5,7)
Q510
BUFFER
MOD VIDEO TU702 ⑥
Q501,502
AV CONT
AV CONT IC160 ⑯
Q800-804
AV LINK
TO AV LINK CN164 ㉖
FROM AV LINK CN164 ㉚
TO/FROM SYSCON BLOCK
(SEE PAGE 3-12,13)
I CONT IC160 (50)
C+ DET IC160 ㉙
FRONT SEL IC160 ㊵
TU VIDEO TU702 ㉔
CN500
LINE-1 (TV)
V OUT
AV CONT
AV LINK
V IN
I
R
G
B
VC, NP, B, EN MODEL
CN570
DECODER/ LINE-4 IN
Q540
C+ DET
Q541
BUFFER
99 MODEL
IC500
J500
LINE-2 OUT
VIDEO
LINE-3 IN
OUT
IN
Q520
BUFFER
JS500
85/90 MODEL
JK-171 BOARD
(SEE PAGE 4-30)
CJ480
LINE-2 IN
VIDEO
FRONT VIDEO
CN480
CN501
IC260 ⑤ REC/PB
H
3.6Vp-p
IC260
VIDEO REC/PB AMP
IC260 ⑦ PB
0.5Vp-p
2V
CN260 ④ REC
40msec
3.6Vp-p
DRUM VIDEO HEAD
SP CH1
SP CH2
LP CH1
LP CH2
CN260
PB
COMP
HA CONT
ENV DET
REC
AGC DET
ATT
AGC
C SYNC
RF ENV
PB RF
COMP OUT
HA SWP
RF SWP
REC C
REC Y RF
REC H
REC CUR ADJ
TRICK H
CN343
CN342
Q271
BUFFER
CN261
CHECK PIN
PB RF
RF SWP
AV ADJ
90 MODEL
Q727-278
RF ENV DET
JS332
85/99 MODEL
IC260 ⑨ REC
0.1µsec/div
470mVp-p
IC260 ⑩ REC
H
280mVp-p
RP-235 BOARD
(SEE PAGE 4-27)
16

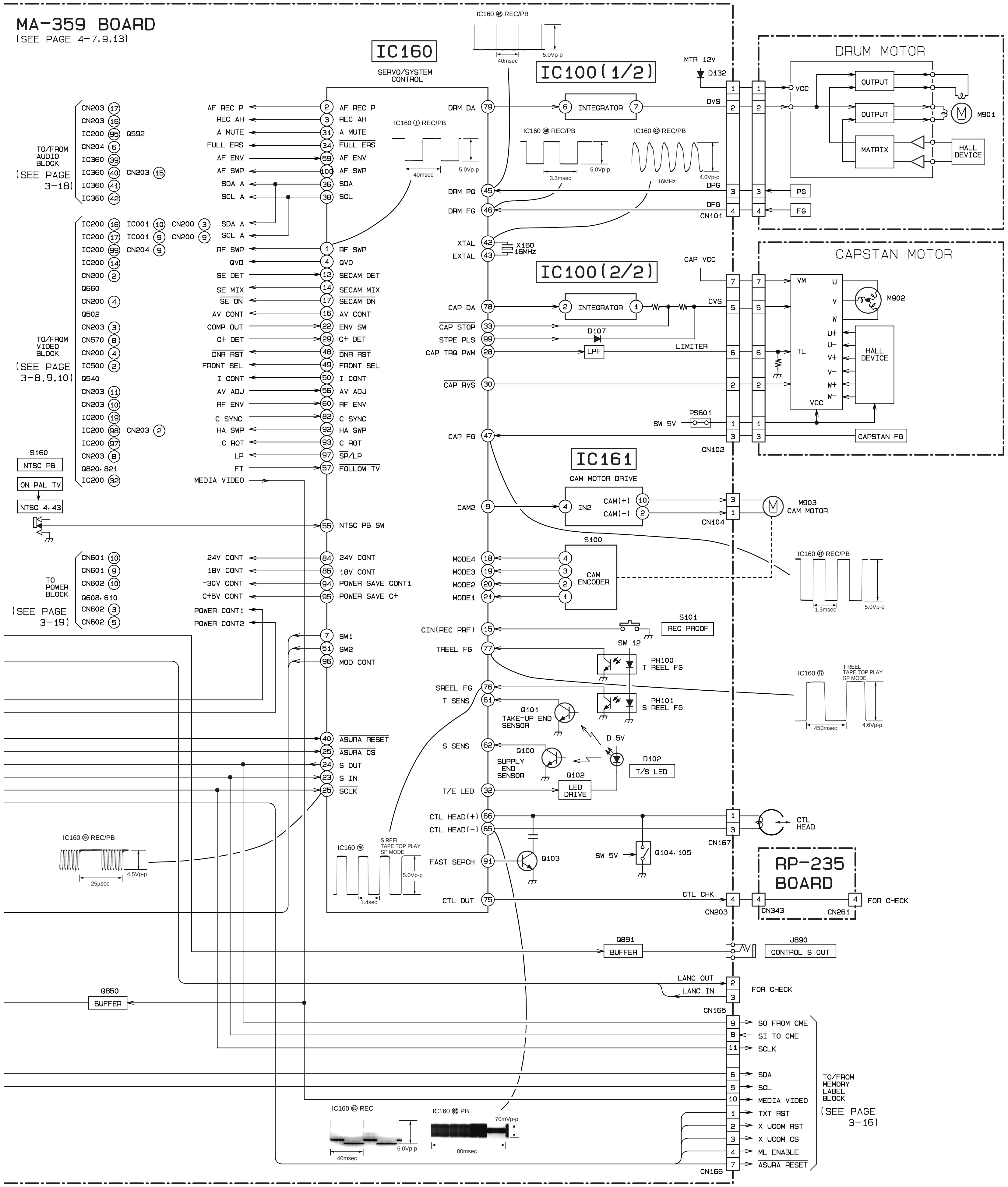
VIDEO BLOCK DIAGRAM (2)


IC200 (1/2)
Y/C PROCESSOR
CLP
6dB AMP
VIDEO AGC
SERIAL DECODER
Q VD
FROM SYSCON BLOCK (SEE PAGE 3-13)
IC160 36 SDA A
IC160 38 SCL A
IC160 4 Q VD
CHARA INS
6dB AMP
KIL B.D
NAP
BPF
FBC 1/2
LPF
YNR
1H DL
BUFFER
CLP
Q203
Y/C MIX
PIC CONT
SYNC SEP
CLK IN
PB-H
INV
1H/2H DL
AMP
LPF
DL EQ
BPF1
ACC AMP
BACK UP AMP
MAIN COMV.
BPF2
SUB COMV.
SUB BPF
C LPF
S007
Q201
DE EMPH
CLP
FM AGC
PB EQ
Q200
EQ
DOUBLE LIM
DEM
SUB LPF
PB BGA-B
PB BGA-A
REC APC
REC BGA
VXO2
X200 4.43MHz
Q202
BUFFER
VCO
SLD
KIL
REC C
REC Y RF
REC H
REC CUR ADJ
TRICK H
RW SWP
HA SWP
C ROT
REC EQ
FM MOD
MAIN EMPH.
N.L EM.PH.
DETAIL ENH
Q204, 205
SECAM SW
B MODEL ONLY
CN203
CN204
C ROT IC160 93
RF ENV IC160 60
COMP OUT IC160 22
HA SWP IC160 92
RF SWP IC160 1
AV ADJ IC160 56
LP IC160 97
TO/FROM SYSCON BLOCK (SEE PAGE 3-13)
IC200 27 REC 2.4Vp-p
IC200 27 PB 2.0Vp-p
IC200 32,34 REC 1.0Vp-p
IC200 61 REC 320mVp-p
IC200 63 REC 400mVp-p
IC200 61 PB 240mVp-p
IC200 63 PB 240mVp-p
IC200 19 4.4Vp-p
IC200 25 REC 2.3Vp-p
IC200 25 PB 2.2Vp-p
IC200 1 PB 400mVp-p 20msec
IC200 5 REC 0.1μsec/div 470mVp-p
IC200 2 REC 280mVp-p
IC200 6 REC 220mVp-p
IC200 6 PB 320mVp-p
IC200 69 REC 4.43MHz 500mVp-p
IC200 69 PB 4.43MHz 400mVp-p
IC661 2 REC/PB 1.3Vp-p
IC660 8 REC/PB 17.73MHz 5.0Vp-p
IC001 4 REC 2.3Vp-p
IC001 4 PB 2.3Vp-p
IC001 20 PB 400mVp-p
IC001 18 REC 2.2Vp-p
IC001 18 PB 2.0Vp-p
Q663 MUTE
Q662 BUFFER
IC660 OSD
X660 17.734475MHz
V OUT
V IN
H
V
CS
SIN
SCLK
MEDIA VIDEO IC850 17 CN166 10
POWER CONT1 CN164 17
CG V CN164 28
OSD CS CN164 14
OSD SIN CN164 22
OSD SCLK CN164 23
TO/FROM SYSCON BLOCK (SEE PAGE 3-12)
B MODEL
CHROMA BPF
Q660, 661
IC661 AFC
DET
H DET CN164 8
X661
Q664 BUFFER
IC001 ARC
DATA
CLK
Y IN
C IN
90:VC, NP, UX, EX/99:VC, NP, UX, EX, EN MODEL
DNR RESET IC160 48
FROM SYSCON BLOCK (SEE PAGE 3-13)
B/85 MODEL
JS204
JS220
CN001
NR-27 BOARD (SEE PAGE 4-43)
IC003 DNR
IC002
IC004
RESET
ON/OFF
SCL
SDA
FSC
C.SYNC
Y IN
C IN
Y OUT
C OUT
VREF C
VREF Y
RV001 C LEVEL
RV002 Y LEVEL
Q008 BUFFER
FL001 LPF
Q002, 004, 005 AMP
Q011 BUFFER
FL002 BPF
Q001, 003, 007 AMP
Q012, 013 AMP
Q009 ATT
Q010 BUFFER
Q006 BUFFER
CN200
CN001
SE-90 BOARD (SEE PAGE 4-39)
IC970 SECAM PROC.
PB 3V
FSC
SECAM VIDEO
PB C
REC C
Q975, 976 PB 5V SW
R/P
REC CHROMA PROCESS
PB CHROMA PROCESS
Q974 BUFFER
Q973 BUFFER
MUTE
DET
Q972 INV
CN970
SE DET IC160 92
SE ON IC160 17
SE MIX IC160 14
TO/FROM SYSCON BLOCK (SEE PAGE 3-13)
B MODEL ONLY

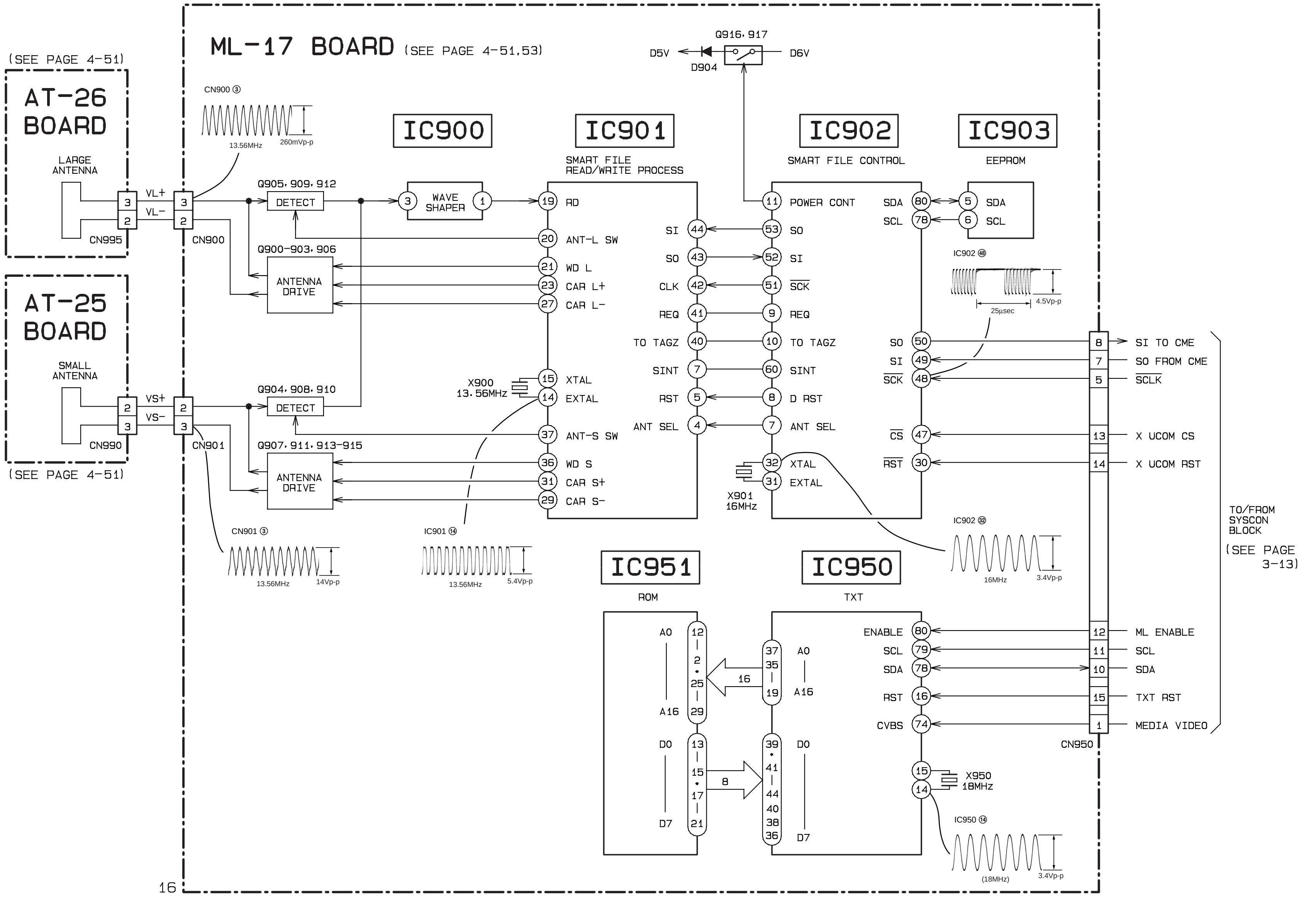
3-3. SERVO BLOCK DIAGRAM (1)


DM-86 BOARD
(SEE PAGE 4-32)
FR-161 BOARD
(SEE PAGE 4-35)
DUAL MODE SHUTTLE
PLAY
STOP
DMS 1
DMS 2
STOP
PLAY
CN451
S453, 457, 458
REW, FF, PAUSE
S451, 459
REC, JOG
D459
JOG
CN452
CN400
S405
EJECT
IC180
MODE CONTROL
DMS1
DMS2
A/D5
A/D4
A/D2
A/D1
A/D0
SIRCS IN
BUZZER
XTAL
EXTAL
TX
TEX
FDP CS
IC182
EEPROM
MODE
EEP SDA
EEP SCL
IC420 ⑧
25μsec
4.5Vp-p
D 5V
D189
L182
D 6V
FB407
FB410
D188
VDD
FB409
C190
BACK-UP
IC183
POWER FAIL
RST
POWER FAIL DET
RESET DET
85 MODEL
S404
PROG+
S401, 402, 403
PROG-, ARC, AUTO SETUP
90/99 MODEL
SWITCH BLOCK
(SEE PAGE 4-32)
S004-007
PROG+, DNR, MEMORY LABEL COMMAND MODE
S001-003
PROG-, RR, AUTO SETUP
CN2
CN401
S404
OK
S401, 402, 403
UP, DOWN, SMART FILE
90/99 MODEL
S400
POWER
D400
POWER
Q400
LED DRIVE
IC180 ㊷
20MHz
5.2Vp-p
IC180 ㊿
32.768kHz
5.2Vp-p
IC400
REMOTE COMMANDER RECEIVER
BZ181
BUZZER
X180
20MHz
X181
32.768KHz
CT180
TIMER
IC420
FL DRIVE
JOG
DNR
ARC
SMART FILE
D421
DNR
99: VC, NP, UX, EN MODEL
D422
ARC
D423
SMART FILE
90/99 MODEL
ND420
FLUORESCENT INDICATOR TUBE
P1
P19
G1
G9
D IN
CLK
CS
CN402
CN164
AV LINK IN
AV LINK OUT
CGV
HDET
OSD CS
OSD SO
OSD SCLK
TXT RST
X UCOM RST
X UCOM CS
ML ENABLE
SDA C
SCL C
PDC DAV
AFT
SIRCS OUT
LANC OUT
LANC IN
POWER CONT1
POWER CONT2
ASURA RESET
ASURA CS
SI
SO
SCLK
FROM AVLINK Q804
TO AVLINK Q803
CG V IC660 ⑪
H DET IC661 ⑧
OSD CS IC660 ㉔
OSD SIN IC660 ㉓
OSD SCLK IC660 ㉒
POWER CONT1 Q663
TO/FROM VIDEO BLOCK
(SEE PAGE 3-8, 10)
TU702
VHF/UHF TUNER RF MODULATOR
AERIAL IN
AERIAL OUT
V OUT
TU V IC200 ㊵
MOD V Q510
TO/FROM VIDEO BLOCK
(SEE PAGE 3-8)
L
R
M OUT
MOD V
MOD A
AFT
TU L IC360 ①
TU R IC360 ②
TU M IC360 ㊹
MOD A IC360 ⑫
TO/FROM AUDIO BLOCK
(SEE PAGE 3-17, 18)
SDA
SCL
SCL
SDA
SDA
SCL
SW1
SW2
MCONT
Q751, 752
MB(5V)
SW 5V
5V
5V
Q780, 781
30V
30V
D702
REG
UN 30V
BB(5V)
D750
D 6V
IC850
VPS/PDC
SCL
SDA
DAVN
CVBS
16

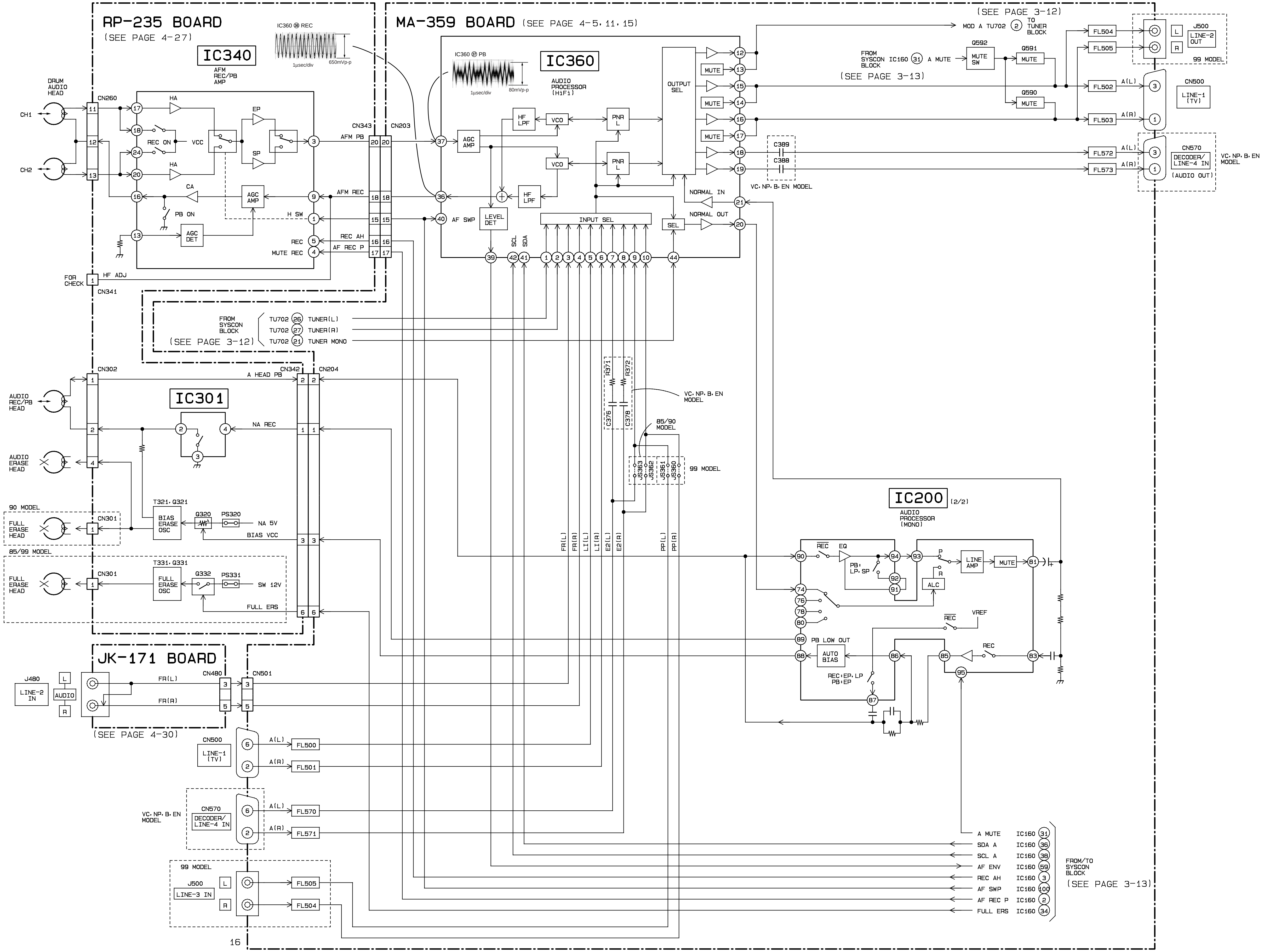
SERVO BLOCK DIAGRAM (2)


MA-359 BOARD
(SEE PAGE 4-7,9,13)
IC160
SERVO/SYSTEM CONTROL
IC100(1/2)
IC100(2/2)
IC161
CAM MOTOR DRIVE
INTEGRATOR
DRUM MOTOR
OUTPUT
MATRIX
HALL DEVICE
M901
VCC
PG
FG
CN101
MTR 12V
D132
DVS
DPG
DFG
CAPSTAN MOTOR
M902
VM
U
V
W
U+
U-
V+
V-
W+
W-
TL
CAPSTAN FG
CAP VCC
CVS
LIMITER
D107
LPF
PS601
SW 5V
CN102
M903
CAM MOTOR
CN104
CAM(+)
CAM(-)
IN2
S100
CAM ENCODER
MODE4
MODE3
MODE2
MODE1
S101
REC PROOF
CIN(REC PRF)
SW 12
PH100
T REEL FG
PH101
S REEL FG
TREEL FG
SREEL FG
T SENS
S SENS
Q101
TAKE-UP END SENSOR
Q100
SUPPLY END SENSOR
D 5V
D102
T/S LED
Q102
LED DRIVE
T/E LED
CTL HEAD(+)
CTL HEAD(-)
CTL HEAD
CN167
FAST SERCH
Q103
Q104, 105
CTL OUT
CTL CHK
CN203
RP-235 BOARD
CN343
CN261
FOR CHECK
Q891
BUFFER
J890
CONTROL S OUT
LANC OUT
LANC IN
CN165
Q850
BUFFER
SO FROM CME
SI TO CME
SCLK
SDA
SCL
MEDIA VIDEO
TXT RST
X UCOM RST
X UCOM CS
ML ENABLE
ASURA RESET
CN166
TO/FROM MEMORY LABEL BLOCK
(SEE PAGE 3-16)
TO/FROM AUDIO BLOCK
(SEE PAGE 3-18)
TO/FROM VIDEO BLOCK
(SEE PAGE 3-8,9,10)
TO POWER BLOCK
(SEE PAGE 3-19)
S160
NTSC PB
ON PAL TV
NTSC 4.43
DRM DA
DRM PG
DRM FG
XTAL
EXTAL
X150
16MHz
CAP DA
CAP STOP
STPE PLS
CAP TRQ PWM
CAP RVS
CAP FG
CAM2
AF REC P
REC AH
A MUTE
FULL ERS
AF ENV
AF SWP
SDA A
SCL A
RF SWP
QVD
SE DET
SE MIX
SE ON
AV CONT
COMP OUT
C+ DET
DNR RST
FRONT SEL
I CONT
AV ADJ
RF ENV
C SYNC
HA SWP
C ROT
LP
FT
MEDIA VIDEO
SECAM DET
SECAM MIX
SECAM ON
ENV SW
FRONT SEL
SP/LP
FOLLOW TV
NTSC PB SW
24V CONT
18V CONT
-30V CONT
C+5V CONT
POWER CONT1
POWER CONT2
POWER SAVE CONT1
POWER SAVE C+
SW1
SW2
MOD CONT
ASURA RESET
ASURA CS
S OUT
S IN
SCLK
CN203 (17)
CN203 (16)
IC200 (95) Q592
CN204 (6)
IC360 (39)
IC360 (40) CN203 (15)
IC360 (41)
IC360 (42)
IC200 (16) IC001 (10) CN200 (3)
IC200 (17) IC001 (9) CN200 (9)
IC200 (99) CN204 (9)
IC200 (14)
CN200 (2)
Q660
CN200 (4)
Q502
CN203 (3)
CN570 (8)
CN200 (4)
IC500 (2)
Q540
CN203 (11)
CN203 (10)
IC200 (19)
IC200 (98) CN203 (2)
IC200 (97)
CN203 (8)
Q820, 821
IC200 (32)
CN601 (10)
CN601 (9)
CN602 (10)
Q608, 610
CN602 (3)
CN602 (5)
IC160 (48) REC/PB
5.0Vp-p
40msec
IC160 (5) REC/PB
IC160 (46) REC/PB
3.3msec
IC160 (42) REC/PB
16MHz
4.0Vp-p
IC160 (47) REC/PB
1.3msec
IC160 (77)
T REEL TAPE TOP PLAY SP MODE
450msec
4.6Vp-p
IC160 (26) REC/PB
25μsec
4.5Vp-p
IC160 (76)
S REEL TAPE TOP PLAY SP MODE
1.4sec
IC160 (66) REC
6.0Vp-p
IC160 (66) PB
70mVp-p
80msec

3-4. MEMORY BLOCK DIAGRAM

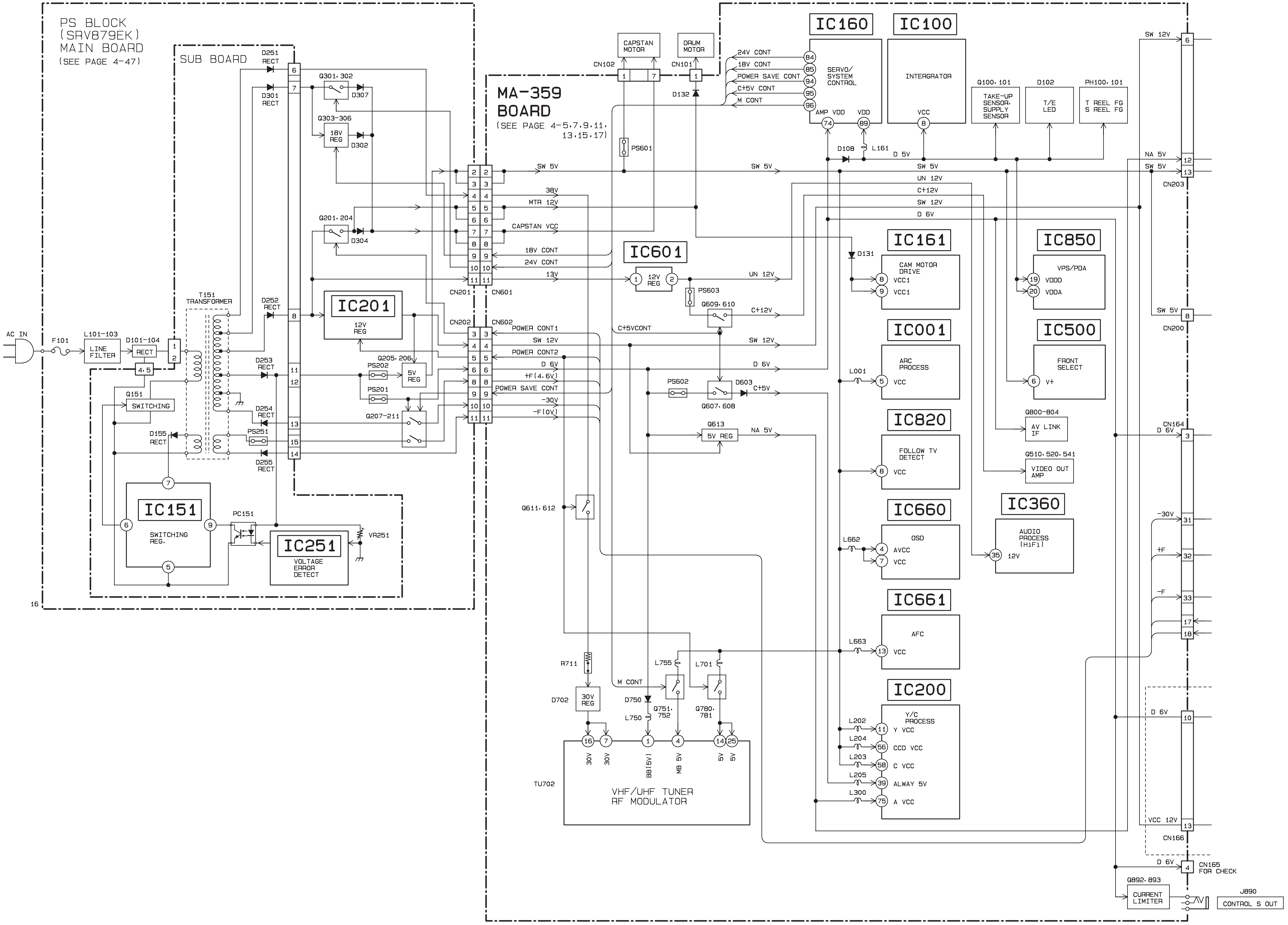

(SEE PAGE 4-51)
AT-26 BOARD
LARGE ANTENNA
CN995
AT-25 BOARD
SMALL ANTENNA
CN990
(SEE PAGE 4-51)
VL+
VL−
VS+
VS−
ML-17 BOARD (SEE PAGE 4-51,53)
CN900
CN901
CN900 ③
13.56MHz
260mVp-p
CN901 ③
13.56MHz
14Vp-p
IC901 ⑭
13.56MHz
5.4Vp-p
Q905,909,912
DETECT
Q900-903,906
ANTENNA DRIVE
Q904,908,910
DETECT
Q907,911,913-915
ANTENNA DRIVE
IC900
WAVE SHAPER
IC901
SMART FILE READ/WRITE PROCESS
RD
ANT-L SW
WD L
CAR L+
CAR L−
XTAL
EXTAL
ANT-S SW
WD S
CAR S+
CAR S−
SI
SO
CLK
REQ
TO TAGZ
SINT
RST
ANT SEL
X900 13.56MHz
Q916,917
D5V
D6V
D904
IC902
SMART FILE CONTROL
POWER CONT
SO
SI
SCK
REQ
TO TAGZ
SINT
D RST
ANT SEL
XTAL
EXTAL
X901 16MHz
SDA
SCL
SO
SI
SCK
CS
RST
IC903
EEPROM
SDA
SCL
IC902 ㊽
25µsec
4.5Vp-p
IC902 ㉜
16MHz
3.4Vp-p
IC951
ROM
A0
A16
D0
D7
16
8
IC950
TXT
A0
A16
D0
D7
ENABLE
SCL
SDA
RST
CVBS
X950 18MHz
IC950 ⑭
(18MHz)
3.4Vp-p
CN950
SI TO CME
SO FROM CME
SCLK
X UCOM CS
X UCOM RST
ML ENABLE
SCL
SDA
TXT RST
MEDIA VIDEO
TO/FROM SYSCON BLOCK
(SEE PAGE 3-13)
16

3-5. AUDIO BLOCK DIAGRAM

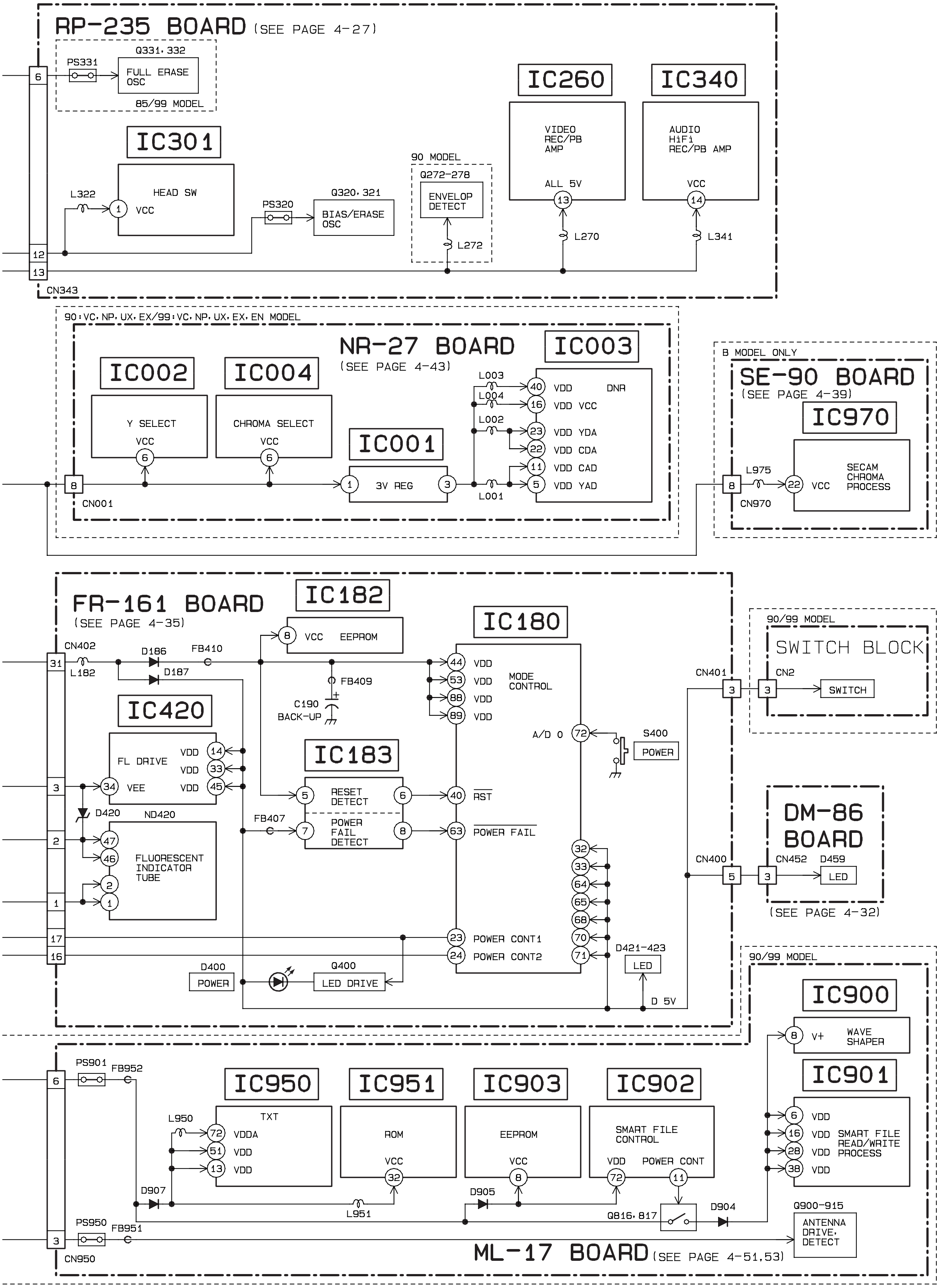


RP-235 BOARD
(SEE PAGE 4-27)
IC340
AFM REC/PB AMP
IC360 ㊱ REC
1μsec/div
650mVp-p
DRUM AUDIO HEAD
CH1
CH2
CN260
HA
EP
SP
REC ON
VCC
CA
AGC AMP
PB ON
AGC DET
H SW
REC
MUTE REC
CN343
AFM PB
AFM REC
REC AH
AF REC P
FOR CHECK
HF ADJ
CN341
MA-359 BOARD (SEE PAGE 4-5, 11, 15)
CN203
IC360 ㊲ PB
80mVp-p
IC360
AUDIO PROCESSOR (HiFi)
AGC AMP
HF LPF
VCO
PNR L
LEVEL DET
AF SWP
OUTPUT SEL
MUTE
INPUT SEL
SCL
SDA
SEL
NORMAL IN
NORMAL OUT
C389
C388
VC, NP, B, EN MODEL
(SEE PAGE 3-12)
MOD A TU702 ② TO TUNER BLOCK
Q592
MUTE SW
Q591
Q590
FROM SYSCON IC160 ㉛ A MUTE BLOCK
(SEE PAGE 3-13)
FL504
FL505
FL502
FL503
FL572
FL573
A(L)
A(R)
J500
LINE-2 OUT
99 MODEL
CN500
LINE-1 (TV)
CN570
DECODER/ LINE-4 IN
(AUDIO OUT)
VC, NP, B, EN MODEL
FROM SYSCON BLOCK
(SEE PAGE 3-12)
TU702 ㉖ TUNER(L)
TU702 ㉗ TUNER(R)
TU702 ㉑ TUNER MONO
R371
R372
C376
C378
85/90 MODEL
JS363
JS362
JS361
JS360
99 MODEL
CN302
CN342
CN204
A HEAD PB
AUDIO REC/PB HEAD
IC301
NA REC
AUDIO ERASE HEAD
T321, Q321
BIAS ERASE OSC
Q320
PS320
NA 5V
BIAS VCC
90 MODEL
FULL ERASE HEAD
CN301
85/99 MODEL
T331, Q331
FULL ERASE OSC
Q332
PS331
SW 12V
FULL ERS
FR(L)
FR(R)
LI(L)
LI(R)
E2(L)
E2(R)
PP(L)
PP(R)
IC200 (2/2)
AUDIO PROCESSOR (MONO)
REC
EQ
PB: LP, SP
P
R
LINE AMP
MUTE
ALC
VREF
PB LOW OUT
AUTO BIAS
REC: EP, LP
PB: EP
JK-171 BOARD
J480
LINE-2 IN
AUDIO
L
R
CN480
CN501
(SEE PAGE 4-30)
CN500
LINE-1 (TV)
FL500
FL501
CN570
DECODER/ LINE-4 IN
FL570
FL571
J500
LINE-3 IN
FL505
FL504
16
A MUTE IC160 ㉛
SDA A IC160 ㊱
SCL A IC160 ㊳
AF ENV IC160 (59)
REC AH IC160 ③
AF SWP IC160 (100)
AF REC P IC160 ②
FULL ERS IC160 ㉞
FROM/TO SYSCON BLOCK
(SEE PAGE 3-13)

3-6. POWER BLOCK DIAGRAM (1)


PS BLOCK
(SRV879EK)
MAIN BOARD
(SEE PAGE 4-47)
SUB BOARD
AC IN
F101
L101-103
LINE FILTER
D101-104
RECT
4,5
Q151
SWITCHING
T151
TRANSFORMER
D155
RECT
IC151
SWITCHING REG.
PC151
IC251
VOLTAGE ERROR DETECT
VR251
D251
RECT
D301
RECT
Q301,302
D307
Q303-306
18V REG
D302
Q201,204
D304
D252
RECT
IC201
12V REG
D253
RECT
D254
RECT
PS251
D255
RECT
PS202
PS201
Q205,206
5V REG
Q207-211
16
CN201
CN601
CN202
CN602
SW 5V
38V
MTR 12V
CAPSTAN VCC
18V CONT
24V CONT
13V
POWER CONT1
SW 12V
POWER CONT2
D 6V
+F(4.6V)
POWER SAVE CONT
-30V
-F(0V)
MA-359
BOARD
(SEE PAGE 4-5,7,9,11,
13,15,17)
CAPSTAN MOTOR
DRUM MOTOR
CN102
CN101
D132
PS601
IC601
12V REG
PS603
Q609,610
C+12V
C+5VCONT
PS602
Q607,608
D603
C+5V
Q613
5V REG
NA 5V
UN 12V
Q611,612
R711
D702
30V REG
D750
L750
L755
Q751,752
M CONT
L701
Q780,781
TU702
VHF/UHF TUNER
RF MODULATOR
30V
30V
BB(5V)
MB 5V
5V
5V
IC160
SERVO/SYSTEM CONTROL
24V CONT
18V CONT
POWER SAVE CONT
C+5V CONT
M CONT
AMP VDD
VDD
IC100
INTERGRATOR
VCC
D108
L161
D 5V
Q100,101
TAKE-UP SENSOR, SUPPLY SENSOR
D102
T/E LED
PH100,101
T REEL FG
S REEL FG
C+12V
SW 12V
D 6V
IC161
D131
CAM MOTOR DRIVE
VCC1
VCC1
IC850
VPS/PDA
VDDD
VDDA
IC001
ARC PROCESS
L001
VCC
IC500
FRONT SELECT
V+
IC820
FOLLOW TV DETECT
VCC
Q800-804
AV LINK IF
Q510,520,541
VIDEO OUT AMP
IC660
L662
OSD
AVCC
VCC
IC360
AUDIO PROCESS (HiFi)
12V
IC661
L663
AFC
VCC
IC200
Y/C PROCESS
L202
Y VCC
L204
CCD VCC
L203
C VCC
L205
ALWAY 5V
L300
A VCC
SW 12V
CN203
NA 5V
SW 5V
SW 5V
CN200
CN164
D 6V
-30V
+F
-F
D 6V
VCC 12V
CN166
D 6V
CN165
FOR CHECK
Q892,893
CURRENT LIMITER
J890
CONTROL S OUT

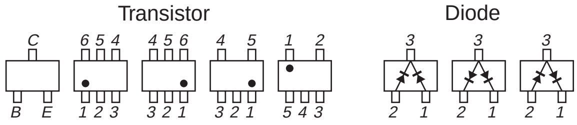
POWER BLOCK DIAGRAM (2)


RP-235 BOARD (SEE PAGE 4-27)
PS331
Q331, 332
FULL ERASE OSC
85/99 MODEL
IC301
HEAD SW
VCC
L322
PS320
Q320, 321
BIAS/ERASE OSC
90 MODEL
Q272-278
ENVELOP DETECT
L272
IC260
VIDEO REC/PB AMP
ALL 5V
L270
IC340
AUDIO HiFi REC/PB AMP
VCC
L341
CN343
90:VC, NP, UX, EX/99:VC, NP, UX, EX, EN MODEL
NR-27 BOARD (SEE PAGE 4-43)
IC002
Y SELECT
VCC
IC004
CHROMA SELECT
VCC
IC001
3V REG
IC003
L003
L004
L002
L001
VDD DNR
VDD VCC
VDD YDA
VDD CDA
VDD CAD
VDD YAD
CN001
B MODEL ONLY
SE-90 BOARD (SEE PAGE 4-39)
IC970
L975
VCC
SECAM CHROMA PROCESS
CN970
FR-161 BOARD (SEE PAGE 4-35)
CN402
L182
D186
D187
FB410
IC182
VCC EEPROM
IC180
VDD
MODE CONTROL
FB409
C190 BACK-UP
A/D 0
S400
POWER
IC420
FL DRIVE
VDD
VEE
D420
ND420
FLUORESCENT INDICATOR TUBE
IC183
RESET DETECT
POWER FAIL DETECT
FB407
RST
POWER FAIL
POWER CONT1
POWER CONT2
D421-423
LED
D400
POWER
Q400
LED DRIVE
D 5V
90/99 MODEL
SWITCH BLOCK
CN401
CN2
SWITCH
DM-86 BOARD
CN400
CN452
D459
LED
(SEE PAGE 4-32)
90/99 MODEL
IC900
V+
WAVE SHAPER
IC901
VDD
SMART FILE READ/WRITE PROCESS
PS901
FB952
IC950
TXT
VDDA
VDD
L950
IC951
ROM
VCC
IC903
EEPROM
VCC
IC902
SMART FILE CONTROL
VDD
POWER CONT
D907
L951
D905
Q816, 817
D904
Q900-915
ANTENNA DRIVE, DETECT
PS950
FB951
CN950
ML-17 BOARD (SEE PAGE 4-51, 53)

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

(For printed wiring boards)
- ▒: Pattern from the side which enables seeing.
  (The other layers' patterns are not indicated.)
- Through hole is omitted.
- Circled numbers refer to waveforms.
- There are few cases that the part printed on diagram isn’t mounted in this model.
- Chip parts.



(For schematic diagrams)
- All capacitors are in µF unless otherwise noted. pF : µµF. 50V or less are not indicated except for electrolytics and tantalums.
- Chip resistors are 1/10W unless otherwise noted.
  kΩ=1000Ω, MΩ=1000kΩ.
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, Because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example C541 L452
22U 10UH
TA A 2520

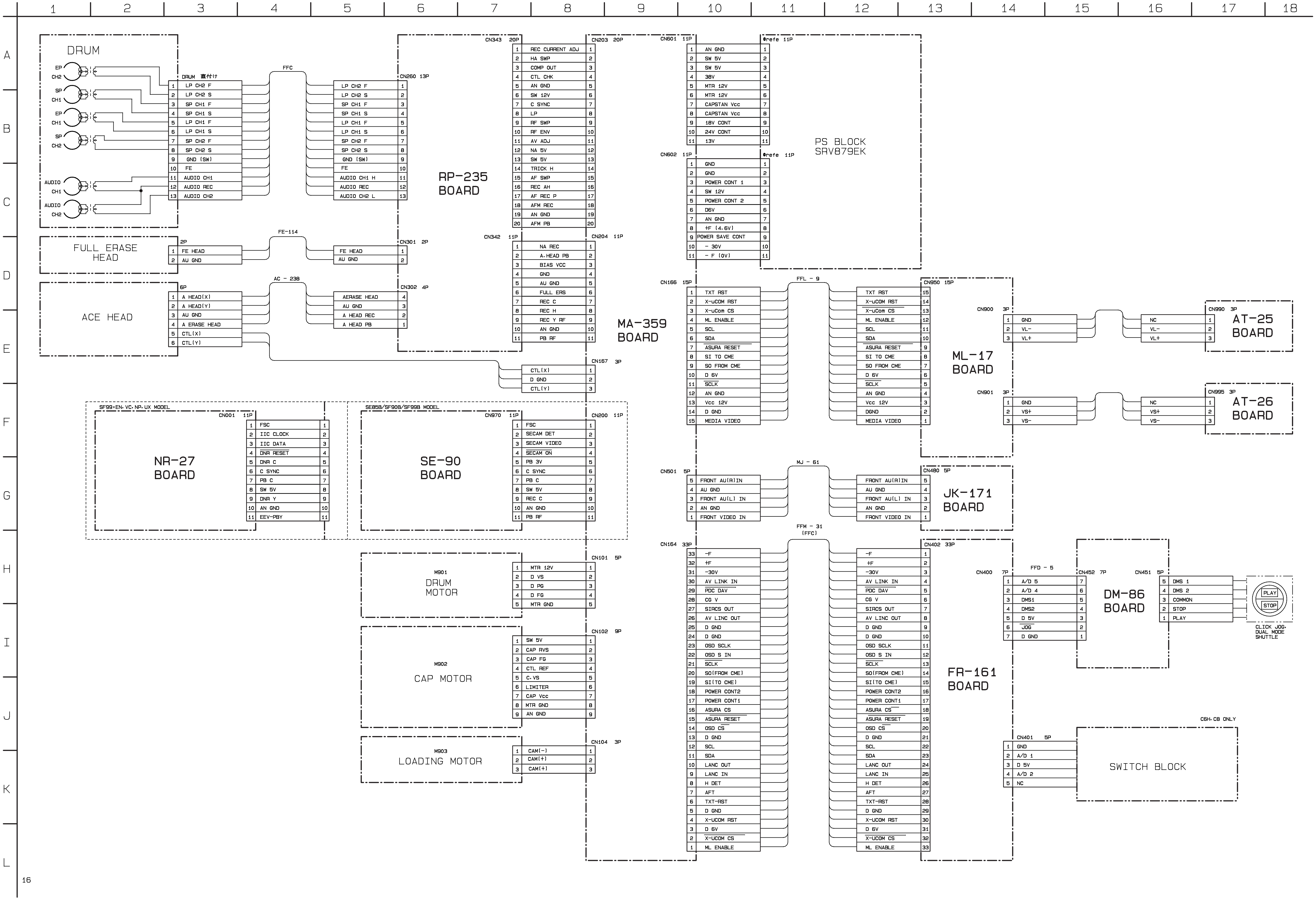
Kinds of capacitor (TA)
Temperature characteristics (A)
External dimensions (mm) (2520)

- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used.
  In such cases, the unused circuits may be indicated.
- Parts with ★ differ according to the model/destination.
  Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
  XEDIT → $\overline{\text{EDIT}}$ PB/XREC → PB/$\overline{\text{REC}}$
- —▭— : non flammable resistor
- —∿— : fusible resistor
- ▭ : panel designation
- △ : internal component.
- B+ : B+ Line.
- B – : B– Line.
- Circled numbers refer to waveforms.
- Readings are taken with a color-bar signal input.
- Voltage are dc between ground and measurement points.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.
- ▭ : adjustment for repair.
- Circled numbers refer to waveforms.

When indicating parts by reference number, please include the board name.

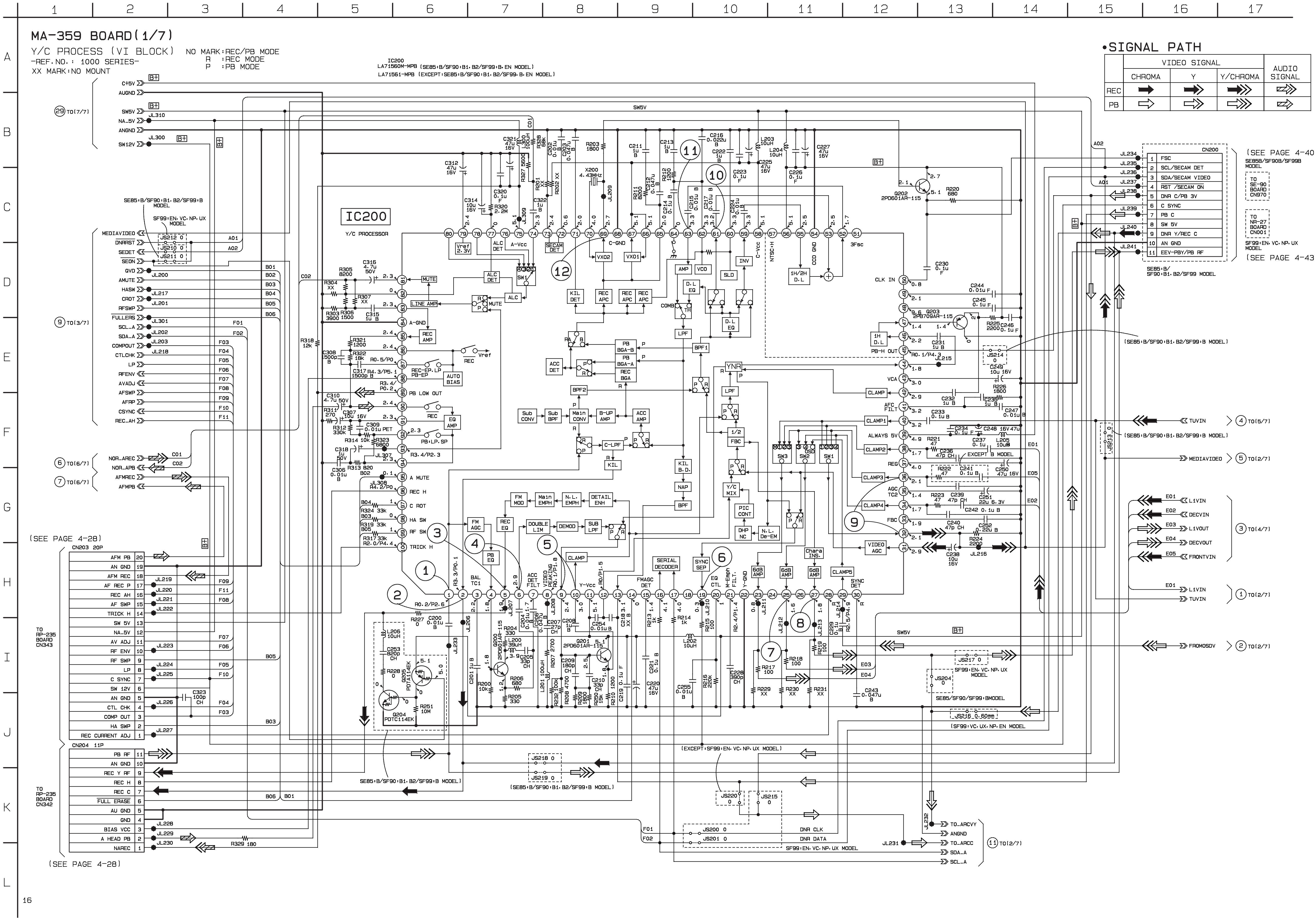
Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

4-1. FRAME SCHEMATIC DIAGRAM


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
A B C D E F G H I J K L
DRUM
EP CH2
SP CH1
EP CH1
SP CH2
AUDIO CH1
AUDIO CH2
DRUM 直付け
LP CH2 F
LP CH2 S
SP CH1 F
SP CH1 S
LP CH1 F
LP CH1 S
SP CH2 F
SP CH2 S
GND (SW)
FE
AUDIO CH1
AUDIO REC
AUDIO CH2
FFC
CN260 13P
AUDIO CH1 H
AUDIO CH2 L
FULL ERASE HEAD
2P
FE HEAD
AU GND
FE-114
CN301 2P
ACE HEAD
6P
A HEAD(X)
A HEAD(Y)
AU GND
A ERASE HEAD
CTL(X)
CTL(Y)
AC - 238
CN302 4P
AERASE HEAD
AU GND
A HEAD REC
A HEAD PB
RP-235 BOARD
CN343 20P
REC CURRENT ADJ
HA SWP
COMP OUT
CTL CHK
AN GND
SW 12V
C SYNC
LP
RF SWP
RF ENV
AV ADJ
NA 5V
SW 5V
TRICK H
AF SWP
REC AH
AF REC P
AFM REC
AN GND
AFM PB
CN203 20P
CN342 11P
NA REC
A.HEAD PB
BIAS VCC
GND
AU GND
FULL ERS
REC C
REC H
REC Y RF
AN GND
PB RF
CN204 11P
CN167 3P
CTL(X)
D GND
CTL(Y)
MA-359 BOARD
SF99:EN,VC,NP,UX MODEL
NR-27 BOARD
CN001 11P
FSC
IIC CLOCK
IIC DATA
DNR RESET
DNR C
C SYNC
PB C
SW 5V
DNR Y
AN GND
EEV-PBY
SE85B/SF90B/SF99B MODEL
SE-90 BOARD
CN970 11P
FSC
SECAM DET
SECAM VIDEO
SECAM ON
PB 3V
C SYNC
PB C
SW 5V
REC C
AN GND
PB RF
CN200 11P
M901 DRUM MOTOR
CN101 5P
MTR 12V
D VS
D PG
D FG
MTR GND
M902 CAP MOTOR
CN102 9P
SW 5V
CAP RVS
CAP FG
CTL REF
C.VS
LIMITER
CAP Vcc
MTR GND
AN GND
M903 LOADING MOTOR
CN104 3P
CAM(-)
CAM(+)
CAM(+)
CN601 11P
AN GND
SW 5V
SW 5V
38V
MTR 12V
MTR 12V
CAPSTAN Vcc
CAPSTAN Vcc
18V CONT
24V CONT
13V
●refe 11P
PS BLOCK SRV879EK
CN602 11P
GND
GND
POWER CONT 1
SW 12V
POWER CONT 2
D5V
AN GND
+F (4.6V)
POWER SAVE CONT
- 30V
- F (0V)
●refe 11P
CN166 15P
FFL - 9
TXT RST
X-uCOM RST
X-uCom CS
ML ENABLE
SCL
SDA
ASURA RESET
SI TO CME
SO FROM CME
D 6V
SCLK
AN GND
Vcc 12V
D GND
MEDIA VIDEO
DGND
CN950 15P
ML-17 BOARD
CN900 3P
GND
VL-
VL+
NC
CN990 3P
AT-25 BOARD
CN901 3P
GND
VS+
VS-
NC
CN995 3P
AT-26 BOARD
CN501 5P
MJ - 61
FRONT AU(R)IN
AU GND
FRONT AU(L) IN
AN GND
FRONT VIDEO IN
CN480 5P
JK-171 BOARD
CN164 33P
FFM - 31 (FFC)
CN402 33P
-F
+F
-30V
AV LINK IN
PDC DAV
CG V
SIRCS OUT
AV LINC OUT
D GND
D GND
OSD SCLK
OSD S IN
SCLK
SO(FROM CME)
SI(TO CME)
POWER CONT2
POWER CONT1
ASURA CS
ASURA RESET
OSD CS
D GND
SCL
SDA
LANC OUT
LANC IN
H DET
AFT
TXT-RST
D GND
X-UCOM RST
D 6V
X-UCOM CS
ML ENABLE
FR-161 BOARD
CN400 7P
FFD - 5
A/D 5
A/D 4
DMS1
DMS2
D 5V
JOG
D GND
CN452 7P
DM-86 BOARD
CN451 5P
DMS 1
DMS 2
COMMON
STOP
PLAY
PLAY
STOP
CLICK JOG, DUAL MODE SHUTTLE
C6H,C8 ONLY
CN401 5P
GND
A/D 1
D 5V
A/D 2
NC
SWITCH BLOCK
16

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

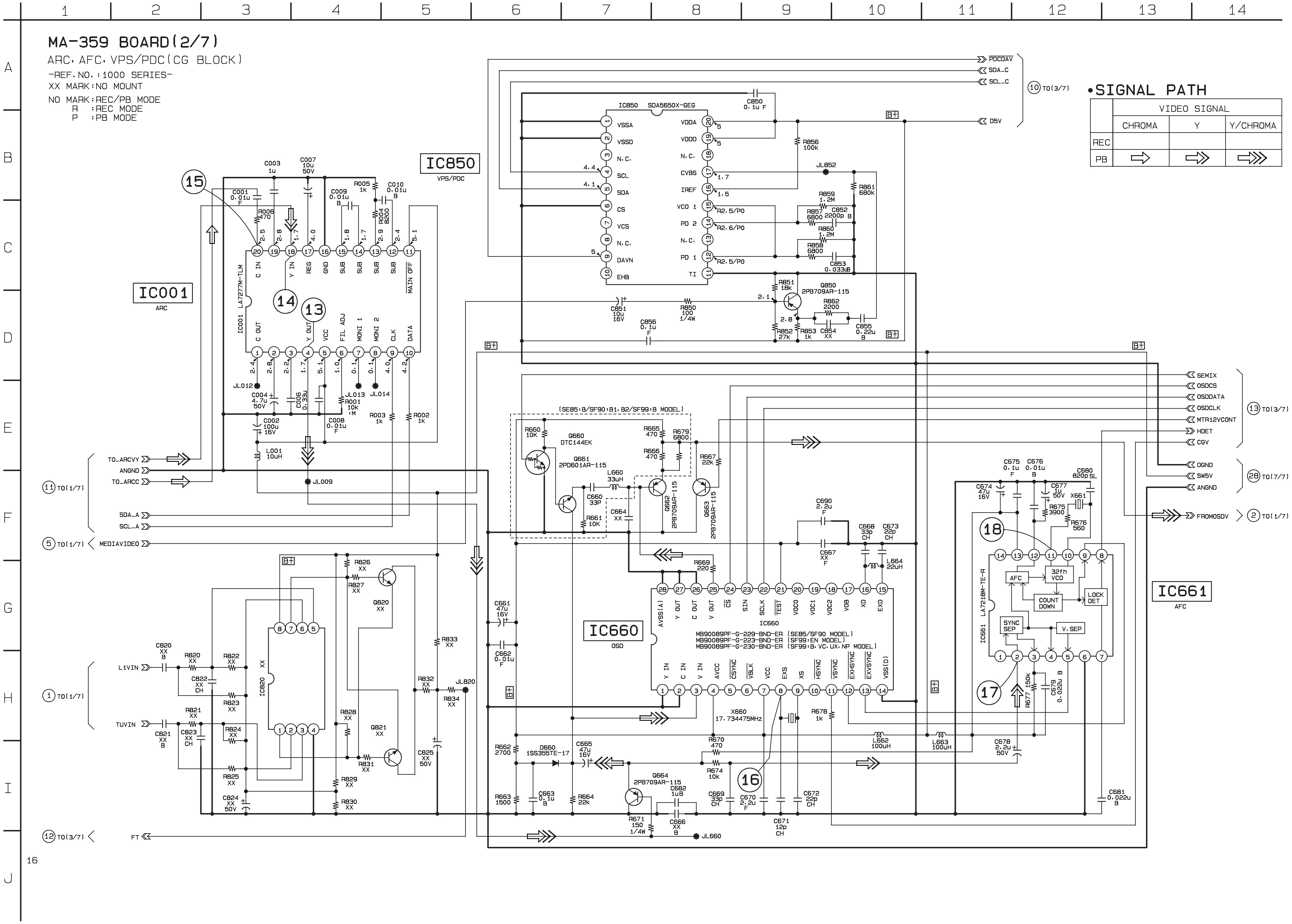
For schematic diagram
- Refer to page 4-19 for printed wiring board.
- Refer to page 4-21 for waveforms.



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
A
B
C
D
E
F
G
H
I
J
K
L
MA-359 BOARD(1/7)
Y/C PROCESS (VI BLOCK)
-REF.NO.: 1000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
IC200
LA71560M-MPB (SE85・B/SF90・B1・B2/SF99・B・EN MODEL)
LA71561-MPB (EXCEPT:SE85・B/SF90・B1・B2/SF99・B・EN MODEL)
IC200
Y/C PROCESSOR
•SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
REC
PB
CN200
FSC
SCL/SECAM DET
SDA/SECAM VIDEO
RST /SECAM ON
DNR C/PB 3V
C SYNC
PB C
SW 5V
DNR Y/REC C
AN GND
EEV-PBY/PB RF
(SEE PAGE 4-40)
SE85B/SF90B/SF99B MODEL
TO SE-90 BOARD CN970
TO NR-27 BOARD CN001
SF99・EN・VC・NP・UX MODEL
(SEE PAGE 4-43)
SE85・B/SF90・B1・B2/SF99 MODEL
29 TO(7/7)
9 TO(3/7)
6 TO(6/7)
7 TO(6/7)
C+5V
AUGND
SW5V
NA_5V
ANGND
SW12V
MEDIAVIDEO
DNRRST
SEDET
SEON
GVD
AMUTE
HASW
CROT
RFSWP
FULLERS
SCL_A
SDA_A
COMPOUT
CTLCHK
LP
RFENV
AVADJ
AFSWP
AFRP
CSYNC
REC_AH
NOR_AREC
NOR_APB
AFMREC
AFMPB
(SEE PAGE 4-28)
CN203 20P
AFM PB
AN GND
AFM REC
AF REC P
REC AH
AF SWP
TRICK H
SW 5V
NA_5V
AV ADJ
RF ENV
RF SWP
LP
C SYNC
SW 12V
AN GND
CTL CHK
COMP OUT
HA SWP
REC CURRENT ADJ
TO RP-235 BOARD CN343
CN204 11P
PB RF
AN GND
REC Y RF
REC H
REC C
FULL ERASE
AU GND
GND
BIAS VCC
A HEAD PB
NAREC
TO RP-235 BOARD CN342
SE85・B/SF90・B1・B2/SF99・B MODEL
SF99・EN・VC・NP・UX MODEL
TUVIN
4 TO(5/7)
MEDIAVIDEO
5 TO(2/7)
L1VIN
DECVIN
L1VOUT
DECVOUT
FRONTVIN
3 TO(4/7)
L1VIN
TUVIN
1 TO(2/7)
FROMOSDV
2 TO(2/7)
TO_ARCVY
ANGND
TO_ARCC
SDA_A
SCL_A
11 TO(2/7)
Q202 2PD601AR-115
Q203 2SB709AR-115
Q200 2PD601AR-115
Q201 2PD601AR-115
Q204 PDTC114EK
Q205 PDTA114EK
X200 4.43MHz
(EXCEPT:SF99・EN・VC・NP・UX MODEL)
(SE85・B/SF90・B1・B2/SF99・B MODEL)
(SF99・VC・UX・NP・EN MODEL)
SE85/SF90/SF99・BMODEL
DNR CLK
DNR DATA

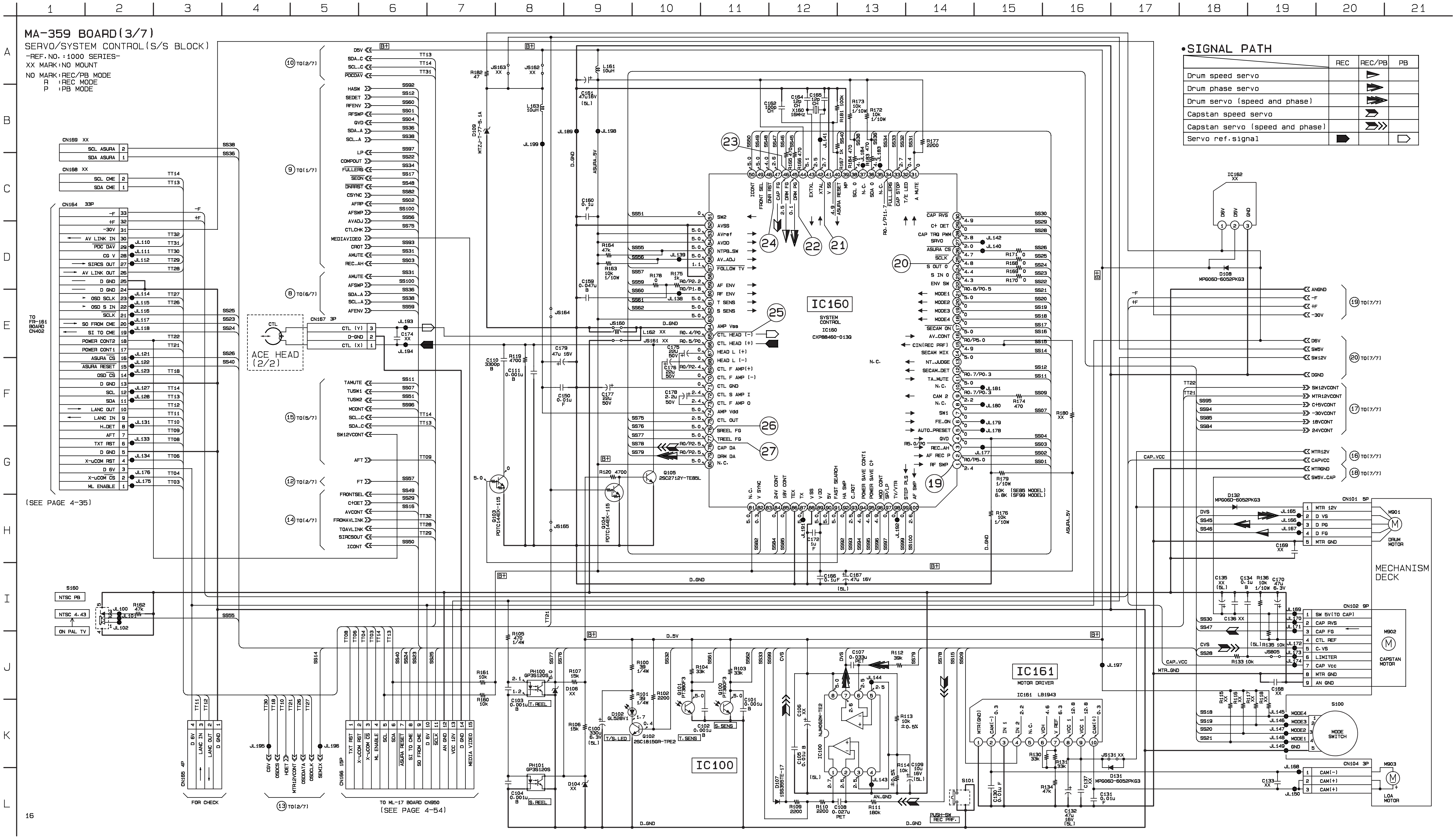
For schematic diagram

- Refer to page 4-19 for printed wiring board.
- Refer to page 4-21 for waveforms.

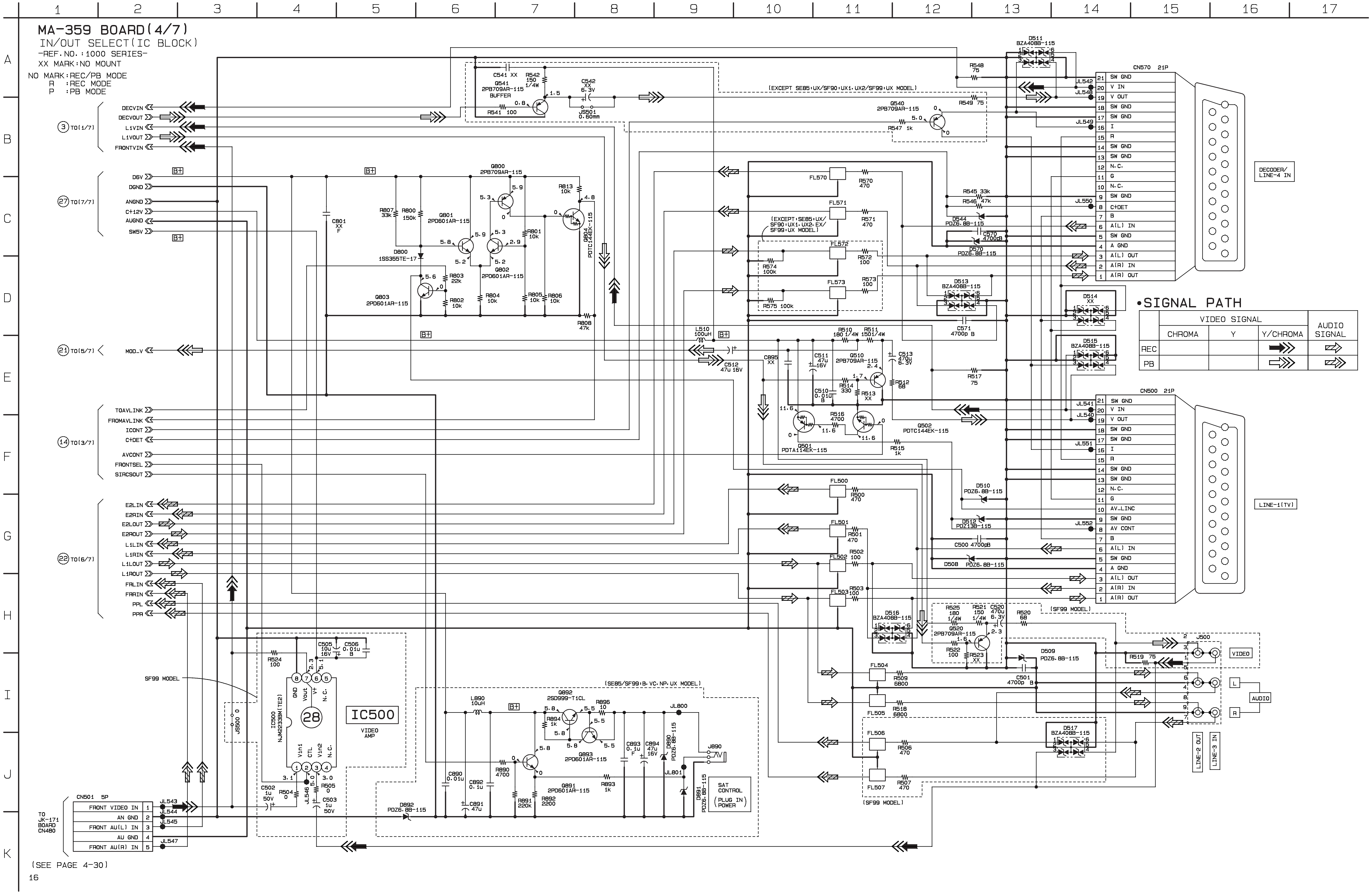

MA-359 BOARD(2/7)
ARC, AFC, VPS/PDC(CG BLOCK)
-REF. NO. : 1000 SERIES-
XX MARK : NO MOUNT
NO MARK : REC/PB MODE
R : REC MODE
P : PB MODE
•SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB
IC850
VPS/PDC
IC850 SDA5650X-GEG
VSSA
VSSD
N.C.
SCL
SDA
CS
VCS
N.C.
DAVN
EHB
VDDA
VDDD
N.C.
CVBS
IREF
VCO 1
PD 2
N.C.
PD 1
TI
IC001
ARC
IC001 LA7277M-TLM
C IN
Y IN
REG
GND
SUB
MAIN OFF
C OUT
Y OUT
VCC
FIL ADJ
MONI 1
MONI 2
CLK
DATA
IC660
OSD
MB90089PF-G-229-BND-ER (SE85/SF90 MODEL)
MB90089PF-G-223-BND-ER (SF99:EN MODEL)
MB90089PF-G-230-BND-ER (SF99:B,VC,UX,NP MODEL)
AVSS(A)
Y OUT
C OUT
V OUT
CS
SIN
SCLK
TEST
VOCO
VOC1
VOC2
VOB
XD
EXD
Y IN
C IN
V IN
AVCC
CSYNC
VBLK
VCC
EXS
XS
HSYNC
VSYNC
EXHSYNC
EXVSYNC
VSS(D)
IC661
AFC
IC661 LA7218M-TE-R
AFC
32fH VCO
COUNT DOWN
LOCK DET
SYNC SEP
V.SEP
IC820
Q660 DTC144EK
Q661 2PD601AR-115
Q662 2PB709AR-115
Q663 2PB709AR-115
Q664 2PB709AR-115
Q850 2PB709AR-115
Q820 XX
Q821 XX
D660 1SS355TE-17
X660 17.734475MHz
X661
(SE85:B/SF90:B1,B2/SF99:B MODEL)
PDCDAV
SDA_C
SCL_C
D5V
10 TO(3/7)
SEMIX
OSDCS
OSDDATA
OSDCLK
MTR12VCONT
HDET
CGV
13 TO(3/7)
DGND
SW5V
ANGND
28 TO(7/7)
FROMOSDV
2 TO(1/7)
TO_ARCVY
ANGND
TO_ARCC
11 TO(1/7)
SDA_A
SCL_A
MEDIAVIDEO
5 TO(1/7)
L1VIN
TUVIN
1 TO(1/7)
FT
12 TO(3/7)
JL009
JL012
JL013
JL014
JL820
JL852
JL660
B+
13
14
15
16
17
18

For schematic diagram

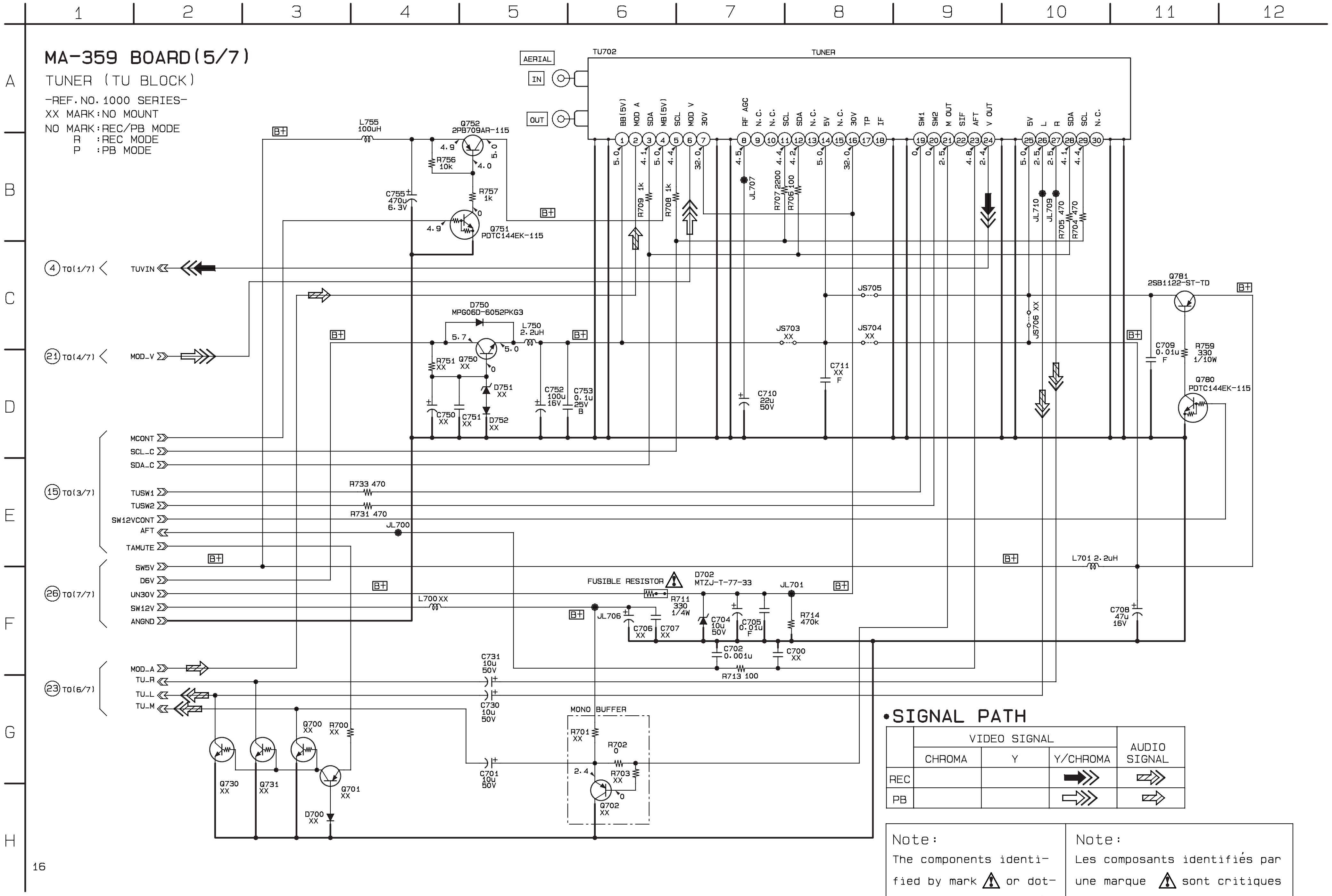
- Refer to page 4-19 for printed wiring board.
- Refer to page 4-22 for waveforms.


MA-359 BOARD(3/7)
SERVO/SYSTEM CONTROL(S/S BLOCK)
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
•SIGNAL PATH
REC
REC/PB
PB
Drum speed servo
Drum phase servo
Drum servo (speed and phase)
Capstan speed servo
Capstan servo (speed and phase)
Servo ref.signal
IC160
SYSTEM CONTROL
IC160
CXP88460-013G
IC161
MOTOR DRIVER
IC161 LB1943
IC100
IC162
ACE HEAD (2/2)
CTL
CN169 XX
CN168 XX
CN164 33P
CN167 3P
CN165 4P
CN166 15P
CN101 5P
CN102 9P
CN104 3P
TO FR-161 BOARD CN402
(SEE PAGE 4-35)
TO ML-17 BOARD CN950
(SEE PAGE 4-54)
FOR CHECK
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
M903 LOA MOTOR
S100 MODE SWITCH
S101 PUSH-SW REC PRF.
MECHANISM DECK
S160 NTSC PB NTSC 4.43 ON PAL TV
Q105 2SC2712Y-TE85L
Q103 PDTC144EK-115
Q104 PDTC144EK-115
Q102 2SC1815GR-TPE2
PH100 GP3S120S T.REEL
PH101 GP3S120S S.REEL
Q101 PT380F3 T.SENS
Q100 PT380F3 S.SENS
D102 GL528V1 T/S.LED
D131 MPG06D-6052PKG3
D132 MPG06D-6052PKG3
D108 MPG06D-6052PKG3
D109 MTZJ-T-77-5.1A
D107 1SS355TE-17
TO(2/7) TO(1/7) TO(6/7) TO(5/7) TO(4/7) TO(7/7)
D.GND
16

For schematic diagram
- Refer to page 4-19 for printed wiring board.
- Refer to page 4-22 for waveforms.


MA-359 BOARD(4/7)
IN/OUT SELECT(IC BLOCK)
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
③ TO(1/7)
DECVIN
DECVOUT
L1VIN
L1VOUT
FRONTVIN
㉗ TO(7/7)
D5V
DGND
ANGND
C+12V
AUGND
SW5V
㉑ TO(5/7)
MOD_V
⑭ TO(3/7)
TOAVLINK
FROMAVLINK
ICONT
C+DET
AVCONT
FRONTSEL
SIRCSOUT
㉒ TO(6/7)
E2LIN
E2RIN
E2LOUT
E2ROUT
L1LIN
L1RIN
L1LOUT
L1ROUT
FRLIN
FRRIN
PPL
PPR
SF99 MODEL
B+
Q541 2PB709AR-115 BUFFER
C541 XX
R542 150 1/4W
R541 100
C542 XX 6.3V
JS501 0.60mm
(EXCEPT SE85:UX/SF90:UX1,UX2/SF99:UX MODEL)
Q540 2PB709AR-115
R547 1k
R548 75
R549 75
D511 BZA408B-115
Q800 2PB709AR-115
Q801 2PD601AR-115
Q802 2PD601AR-115
Q803 2PD601AR-115
Q804 PDTC144EK-115
D800 1SS355TE-17
C801 XX F
R800 150k
R807 33k
R813 10k
R801 10k
R803 22k
R802 10k
R804 10k
R805 10k
R806 10k
R808 47k
FL570
FL571
FL572
FL573
R570 470
R571 470
R572 100
R573 100
R574 100k
R575 100k
(EXCEPT:SE85:UX/SF90:UX1,UX2,EX/SF99:UX MODEL)
R545 33k
R546 47k
D544 PDZ6.8B-115
C570 4700pB
D570 PDZ6.8B-115
D513 BZA408B-115
D514 XX
D515 BZA408B-115
C571 4700p B
L510 100uH
C512 47u 16V
C895 XX
C511 47u 16V
Q510 2PB709AR-115
R510 180 1/4W
R511 150 1/4W
C513 470u 6.3V
R512 68
R513 XX
R514 330
C510 0.01u B
R516 4700
Q501 PDTA114EK-115
Q502 PDTC144EK-115
R515 1k
R517 75
CN570 21P
CN500 21P
DECODER/LINE-4 IN
LINE-1(TV)
JL542
JL548
JL549
JL550
JL541
JL540
JL551
JL552
SW GND
V IN
V OUT
I
R
N.C.
G
C+DET
B
A(L) IN
A GND
A(L) OUT
A(R) IN
A(R) OUT
AV_LINC
AV CONT
•SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
REC
PB
FL500
FL501
FL502
FL503
R500 470
R501 470
R502 100
R503 100
D510 PDZ6.8B-115
D512 PDZ13B-115
C500 4700pB
D508 PDZ6.8B-115
D516 BZA408B-115
Q520 2PB709AR-115
R525 180 1/4W
R521 150 1/4W
C520 470u 6.3V
R520 68
R522 100
R523 XX
(SF99 MODEL)
D509 PDZ6.8B-115
C501 4700p B
R519 75
J500
VIDEO
AUDIO
L
R
FL504
FL505
FL506
FL507
R509 6800
R518 6800
R506 470
R507 470
D517 BZA408B-115
LINE-2 OUT
LINE-3 IN
(SF99 MODEL)
IC500 NJM2233BM(TE2)
IC500 VIDEO AMP
GND Vout V+ N.C.
Vin1 CTL Vin2 N.C.
R524 100
C505 10u 16V
C506 0.01u B
JS500 0
C502 1u 50V
R504 0
R505 0
C503 1u 50V
JL546
(SE85/SF99:B,VC,NP,UX MODEL)
L890 10uH
Q892 2SD999-T1CL
R896 10
R894 1k
Q893 2PD601AR-115
Q891 2PD601AR-115
R893 1k
C890 0.01u
C892 0.1u
C891 47u
R890 4700
R891 220k
R892 2200
C893 0.1u F
C894 47u 16V
D890 PDZ6.8B-115
D891 PDZ6.8B-115
D892 PDZ6.8B-115
JL800
JL801
J890
SAT CONTROL (PLUG IN POWER)
CN501 5P
FRONT VIDEO IN
AN GND
FRONT AU(L) IN
AU GND
FRONT AU(R) IN
JL543
JL544
JL545
JL547
TO JK-171 BOARD CN480
(SEE PAGE 4-30)
16

For schematic diagram
- Refer to page 4-19 for printed wiring board.

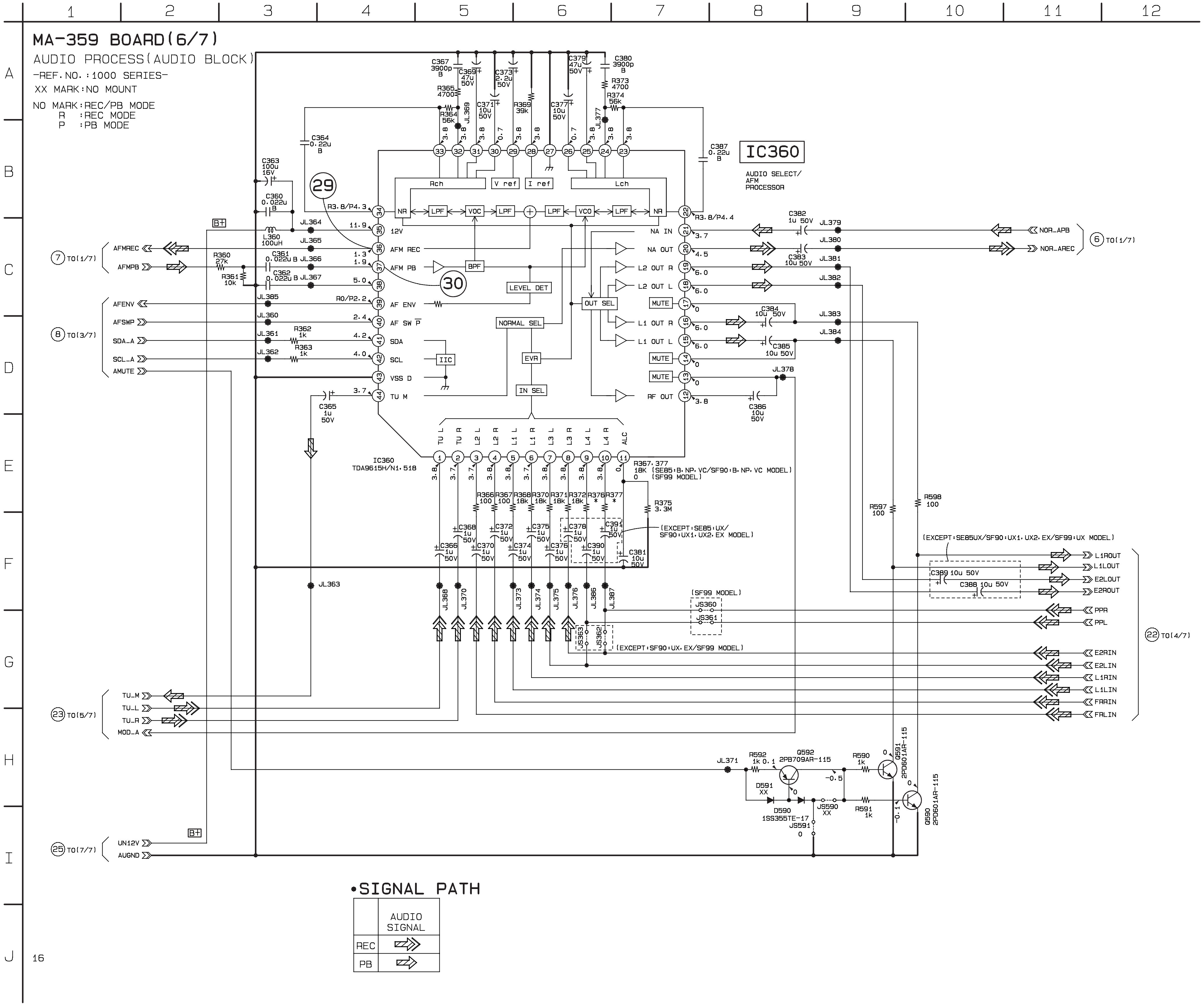

MA-359 BOARD(5/7)
TUNER (TU BLOCK)
-REF.NO.1000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
AERIAL
IN
OUT
TU702
TUNER
BB(5V)
MOD A
SDA
MB(5V)
SCL
MOD V
30V
RF AGC
N.C.
SW1
SW2
M OUT
SIF
AFT
V OUT
5V
L
R
TP
IF
L755 100uH
Q752 2PB709AR-115
R756 10k
R757 1k
C755 470u 6.3V
Q751 PDTC144EK-115
R709 1k
R708 1k
JL707
R707 2200
R706 100
JL710
JL709
R705 470
R704 470
4 TO(1/7)
TUVIN
21 TO(4/7)
MOD_V
D750 MPG06D-6052PKG3
L750 2.2uH
R751 XX
Q750 XX
D751 XX
D752 XX
C750 XX
C751 XX
C752 100u 16V
C753 0.1u 25V B
C710 22u 50V
JS703 XX
JS704 XX
JS705
JS706 XX
C711 XX F
Q781 2SB1122-ST-TD
C709 0.01u F
R759 330 1/10W
Q780 PDTC144EK-115
15 TO(3/7)
MCONT
SCL_C
SDA_C
TUSW1
TUSW2
SW12VCONT
AFT
TAMUTE
R733 470
R731 470
JL700
26 TO(7/7)
SW5V
D6V
UN30V
SW12V
ANGND
L700 XX
FUSIBLE RESISTOR
D702 MTZJ-T-77-33
R711 330 1/4W
JL701
JL706
C706 XX
C707 XX
C704 10u 50V
C705 0.01u F
R714 470k
C702 0.001u
C700 XX
R713 100
L701 2.2uH
C708 47u 16V
23 TO(6/7)
MOD_A
TU_R
TU_L
TU_M
C731 10u 50V
C730 10u 50V
C701 10u 50V
MONO BUFFER
R701 XX
R702 0
R703 XX
Q702 XX
Q700 XX
R700 XX
Q730 XX
Q731 XX
Q701 XX
D700 XX
B+
16

•SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡	⇨
PB			⇨	⇨

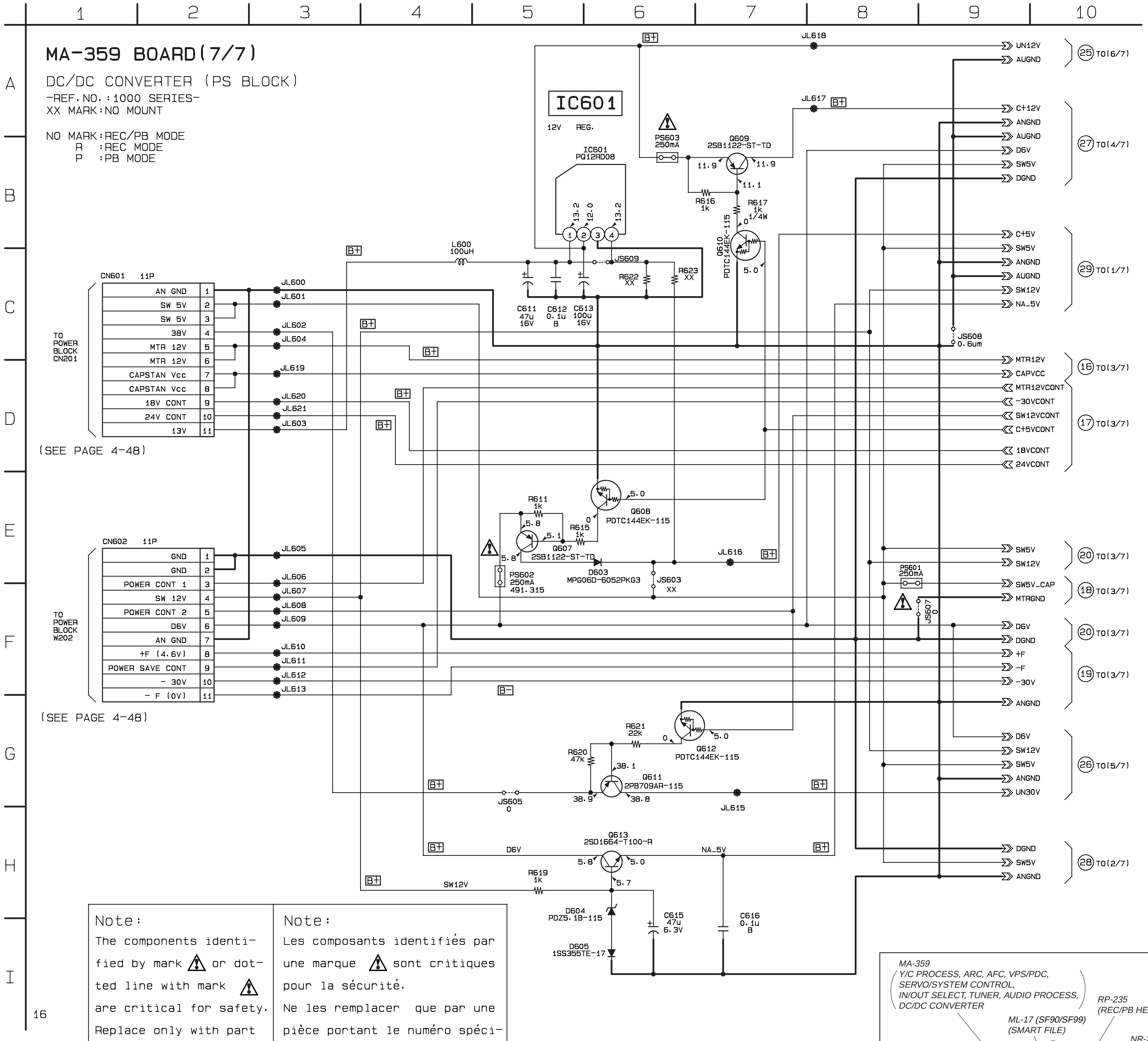
Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

For schematic diagram
- Refer to page 4-19 for printed wiring board.
- Refer to page 4-22 for waveforms.

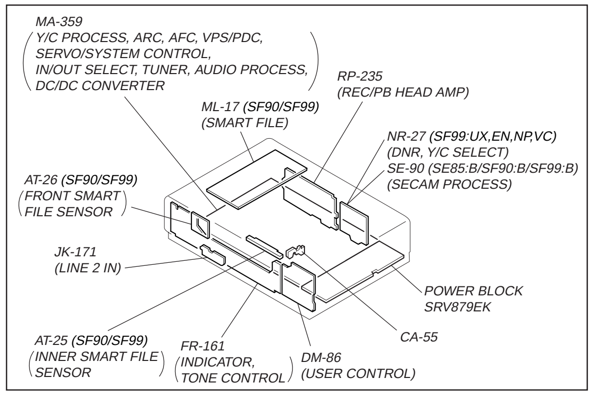

MA-359 BOARD(6/7)
AUDIO PROCESS(AUDIO BLOCK)
-REF. NO.:1000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
IC360
AUDIO SELECT/
AFM
PROCESSOR
IC360
TDA9615H/N1.518
Rch
V ref
I ref
Lch
NR
LPF
VCO
BPF
LEVEL DET
NORMAL SEL
EVR
IN SEL
OUT SEL
MUTE
IIC
12V
AFM REC
AFM PB
AF ENV
AF SW P
SDA
SCL
VSS D
TU M
NA IN
NA OUT
L2 OUT R
L2 OUT L
L1 OUT R
L1 OUT L
RF OUT
TU L
TU R
L2 L
L2 R
L1 L
L1 R
L3 L
L3 R
L4 L
L4 R
ALC
R367, 377
18K (SE85:B, NP, VC/SF90:B, NP, VC MODEL)
0 (SF99 MODEL)
(EXCEPT:SE85:UX/SF90:UX1, UX2, EX MODEL)
(EXCEPT:SE85UX/SF90:UX1, UX2, EX/SF99:UX MODEL)
(SF99 MODEL)
(EXCEPT:SF90:UX, EX/SF99 MODEL)
7 TO(1/7)
AFMREC
AFMPB
8 TO(3/7)
AFENV
AFSWP
SDA_A
SCL_A
AMUTE
23 TO(5/7)
TU_M
TU_L
TU_R
MOD_A
25 TO(7/7)
UN12V
AUGND
6 TO(1/7)
NOR_APB
NOR_AREC
22 TO(4/7)
L1ROUT
L1LOUT
E2LOUT
E2ROUT
PPR
PPL
E2RIN
E2LIN
L1RIN
L1LIN
FRRIN
FRLIN
Q592
2PB709AR-115
Q591
2PD601AR-115
Q590
2PD601AR-115
D590
1SS355TE-17
D591
XX
29
30
B+
16

•SIGNAL PATH

	AUDIO SIGNAL
REC	▨⇨
PB	⇨


1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
G
H
I
MA-359 BOARD(7/7)
DC/DC CONVERTER (PS BLOCK)
-REF.NO.:1000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
CN601 11P
AN GND 1
SW 5V 2
SW 5V 3
38V 4
MTR 12V 5
MTR 12V 6
CAPSTAN Vcc 7
CAPSTAN Vcc 8
18V CONT 9
24V CONT 10
13V 11
TO POWER BLOCK CN201
(SEE PAGE 4-48)
CN602 11P
GND 1
GND 2
POWER CONT 1 3
SW 12V 4
POWER CONT 2 5
D6V 6
AN GND 7
+F (4.6V) 8
POWER SAVE CONT 9
- 30V 10
- F (0V) 11
TO POWER BLOCK W202
(SEE PAGE 4-48)
JL600
JL601
JL602
JL604
JL619
JL620
JL621
JL603
JL605
JL606
JL607
JL608
JL609
JL610
JL611
JL612
JL613
B+
B-
L600 100uH
IC601
12V REG.
IC601 PQ12RD08
13.2
12.0
13.2
C611 47u 16V
C612 0.1u B
C613 100u 16V
JS609
R622 XX
R623 XX
PS603 250mA
Q609 2SB1122-ST-TD
11.9
11.9
11.1
R616 1k
R617 1k 1/4W
0
Q610 PDTC144EK-115
5.0
JL618
JL617
JS608 0.6um
R611 1k
5.8
5.1
R615 1k
0
5.0
Q608 PDTC144EK-115
Q607 2SB1122-ST-TD
5.8
PS602 250mA 491.315
D603 MPG06D-6052PKG3
JS603 XX
JL616
PS601 250mA
JS607 0
R621 22k
0
5.0
Q612 PDTC144EK-115
R620 47k
38.1
Q611 2PB709AR-115
38.9
38.8
JS605 0
JL615
Q613 2SD1664-T100-R
D6V
NA_5V
5.8
5.0
5.7
R619 1k
SW12V
D604 PDZ5.1B-115
D605 1SS355TE-17
C615 47u 6.3V
C616 0.1u B
UN12V
AUGND
25 TO(6/7)
C+12V
ANGND
AUGND
D6V
SW5V
DGND
27 TO(4/7)
C+5V
SW5V
ANGND
AUGND
SW12V
NA_5V
29 TO(1/7)
MTR12V
CAPVCC
MTR12VCONT
16 TO(3/7)
-30VCONT
SW12VCONT
C+5VCONT
18VCONT
24VCONT
17 TO(3/7)
SW5V
SW12V
20 TO(3/7)
SW5V_CAP
MTRGND
18 TO(3/7)
D6V
DGND
20 TO(3/7)
+F
-F
-30V
ANGND
19 TO(3/7)
D6V
SW12V
SW5V
ANGND
UN30V
26 TO(5/7)
DGND
SW5V
ANGND
28 TO(2/7)
16

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.


MA-359
Y/C PROCESS, ARC, AFC, VPS/PDC, SERVO/SYSTEM CONTROL, IN/OUT SELECT, TUNER, AUDIO PROCESS, DC/DC CONVERTER
RP-235
(REC/PB HEAD AMP)
ML-17 (SF90/SF99)
(SMART FILE)
NR-27 (SF99:UX,EN,NP,VC)
(DNR, Y/C SELECT)
SE-90 (SE85:B/SF90:B/SF99:B)
(SECAM PROCESS)
AT-26 (SF90/SF99)
FRONT SMART FILE SENSOR
JK-171
(LINE 2 IN)
POWER BLOCK SRV879EK
CA-55
AT-25 (SF90/SF99)
INNER SMART FILE SENSOR
FR-161
INDICATOR, TONE CONTROL
DM-86
(USER CONTROL)

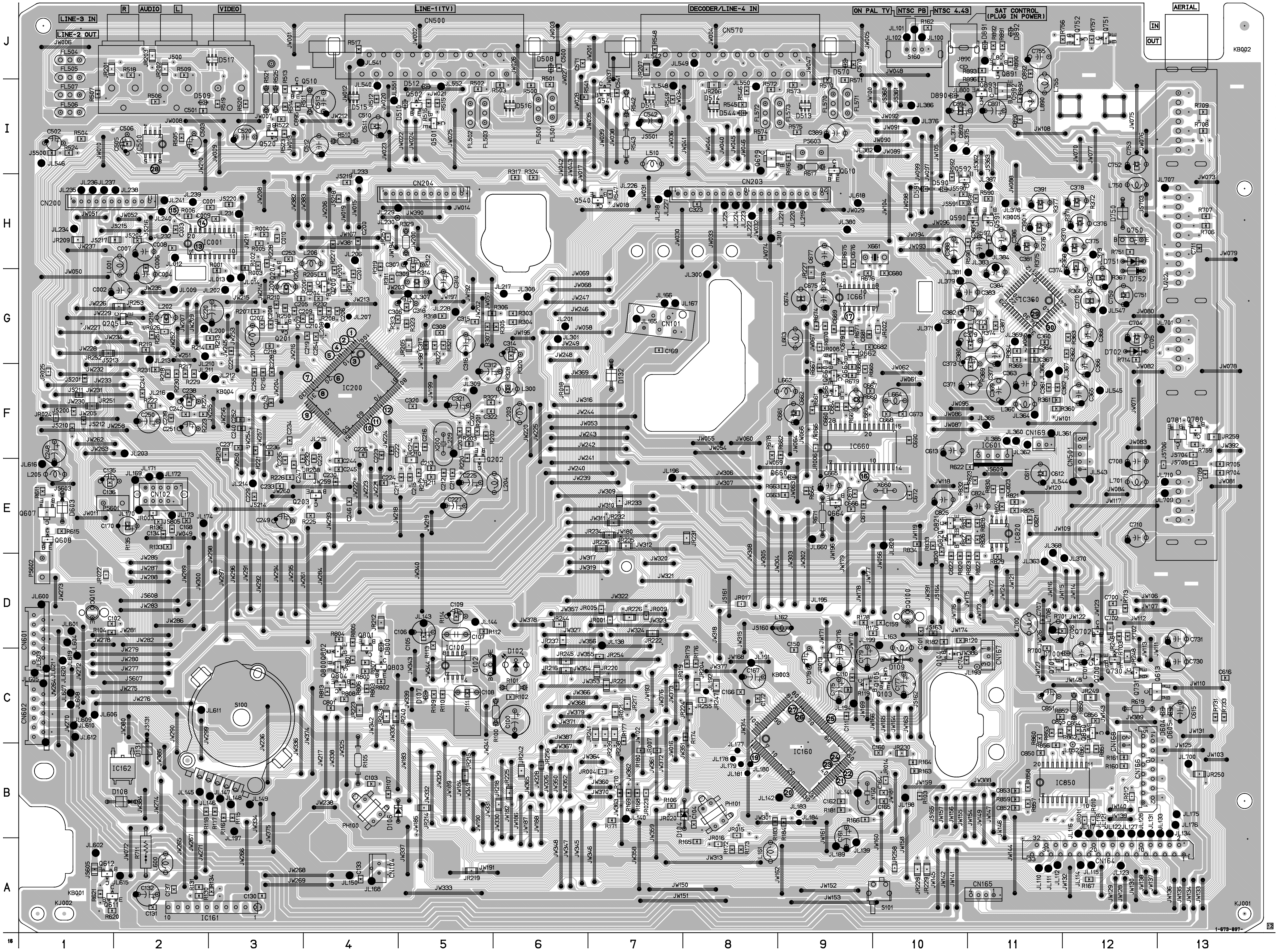
For printed wiring boards

There are few cases that the part printed on this diagram isn’t mounted in this model.

MA-359 (Y/C PROCESS, ARC, AFC, VPS/PDC, SERVO/SYSTEM CONTROL, IN/OUT SELECT, TUNER, AUDIO PROCESS, DC/DC CONVERTER) PRINTED WIRING BOARD

— Ref. No. MA-359 Board; 1,000 Series —

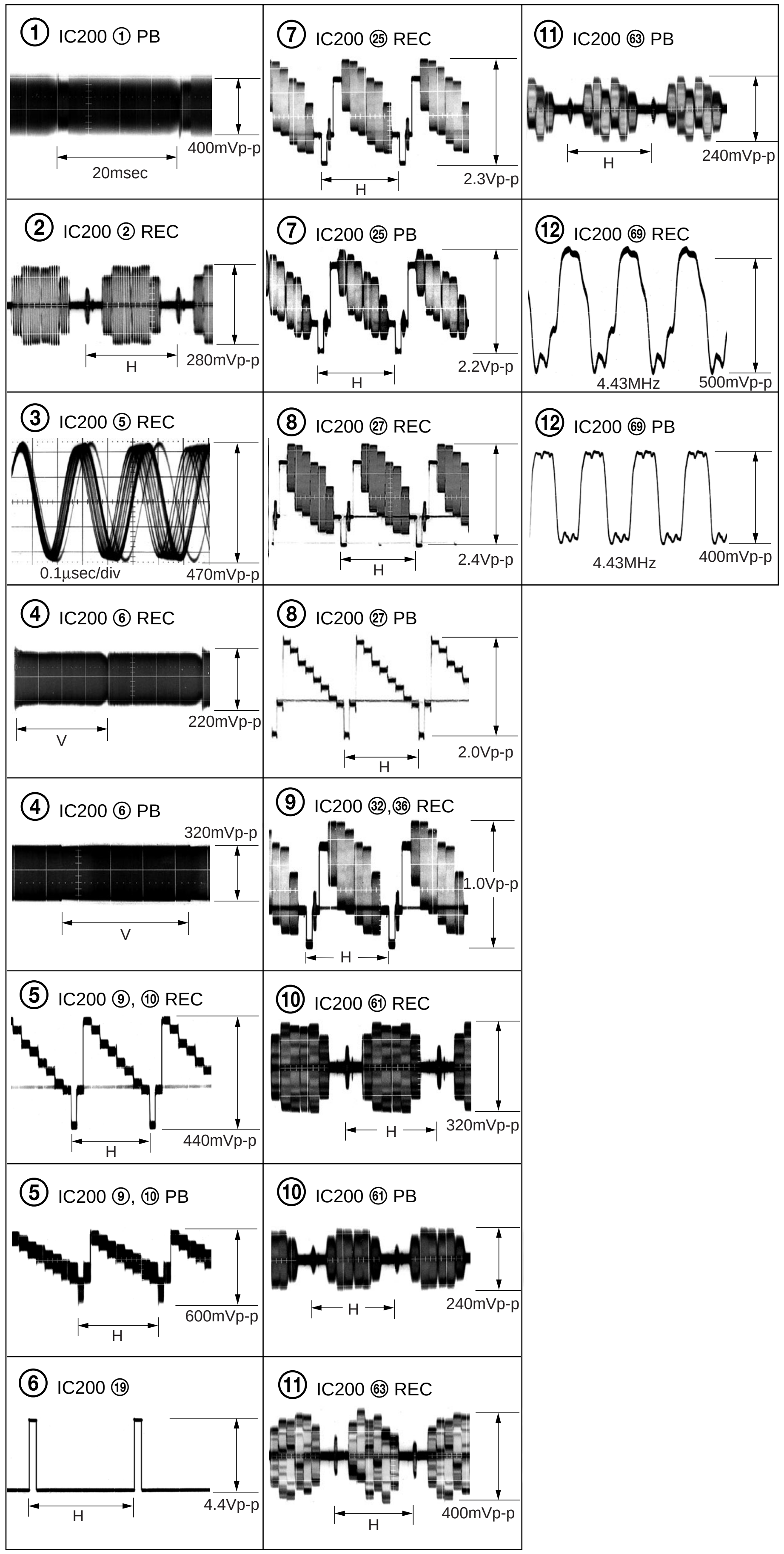
MA-359 BOARD(SIDE B)


LINE-3 IN
LINE-2 OUT
R
AUDIO
L
VIDEO
LINE-1(TV)
CN500
DECODER/LINE-4 IN
CN570
ON PAL TV
NTSC PB
NTSC 4.43
SAT CONTROL (PLUG IN POWER)
AERIAL
IN
OUT
IC200
IC360
IC660
IC160
IC850
IC162
IC161
CN101
CN102
CN164
CN165
CN601
CN602
CN203
CN204
CN200
J
I
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
11
12
13
1-673-897-12

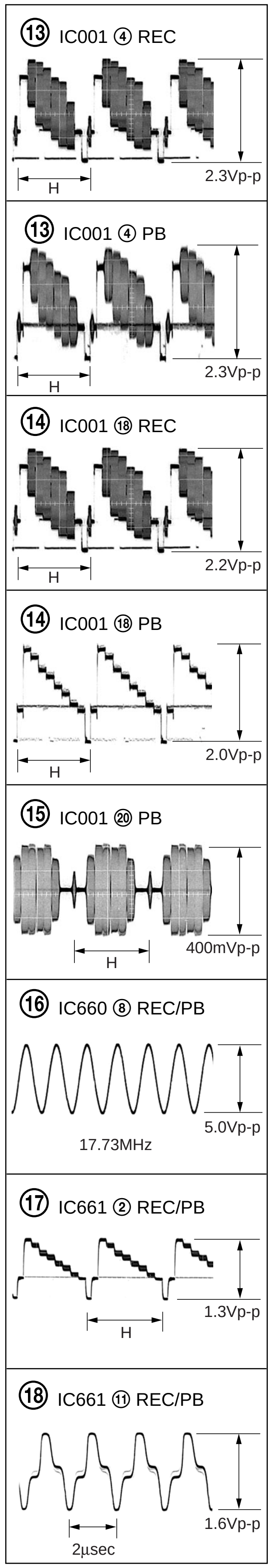
MA-359 BOARD

CN101	G-7
CN102	E-2
CN104	A-4
CN164	A-12
CN165	A-11
CN166	B-12
CN167	C-11
CN168	C-12
CN169	F-11
CN203	H-8
CN204	H-5
CN500	J-5
CN501	E-12
CN570	J-8
CN602	C-1
D102	C-6
D104	B-7
D106	B-4
D107	C-5
D108	B-2
D109	C-10
D131	B-2
D132	F-7
D508	J-6
D509	I-2
D510	I-5
D511	I-7
D512	I-5
D513	I-9
D514	I-8
D515	I-4
D516	I-6
D517	J-3
D544	I-8
D570	J-9
D590	H-10
D591	H-10
D603	E-1
D604	C-13
D605	C-13
D660	E-8
D700	C-11
D702	G-12
D750	H-12
D751	H-12
D752	G-12
D800	D-4
D890	I-10
D892	J-11
IC001	H-3
IC100	D-5
IC160	B-9
IC161	A-3
IC162	B-2
IC200	F-4
IC200	H-1
IC360	G-11
IC500	I-2
IC601	F-11
IC660	F-9
IC661	G-9
IC820	E-11
Q100	D-10
Q101	D-1
Q102	C-5
Q103	C-10
Q104	C-10
Q105	C-10
Q200	G-4
Q201	G-3
Q202	E-5
Q203	E-3
Q204	G-3
Q501	I-5
Q502	I-5
Q510	I-3
Q520	I-3
Q540	H-7
Q541	I-7
Q590	H-10
Q591	H-11
Q592	H-10
Q607	E-1
Q608	E-1
Q609	I-8
Q610	I-9
Q611	A-1
Q612	A-1
Q613	C-12
Q660	F-9
Q661	F-9
Q662	G-9
Q663	F-9
Q664	E-9
Q700	C-12
Q701	C-11
Q702	D-12
Q730	C-12
Q731	C-12
Q750	H-12
Q751	J-13
Q752	J-13
Q780	F-13
Q781	F-13
Q800	C-4
Q801	D-4
Q802	C-4
Q803	C-4
Q804	C-4
Q820	E-10
Q821	E-10
Q850	C-12
Q891	J-11
Q892	I-11
Q893	I-11

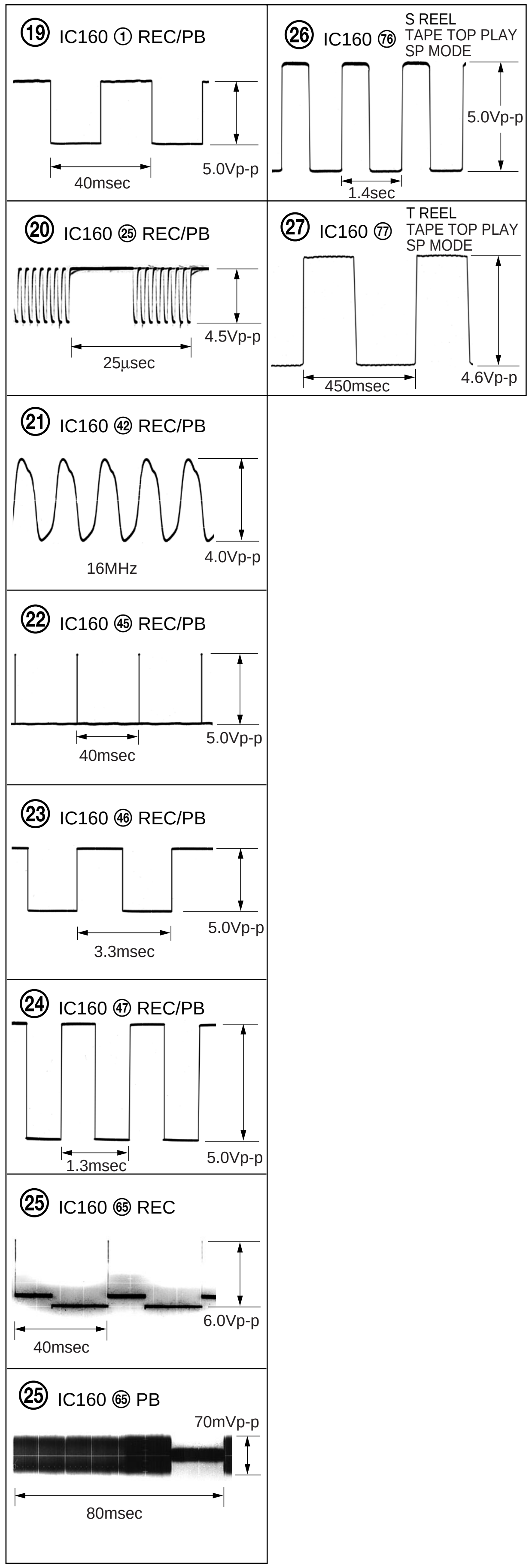
MA-359 BOARD (1/7)



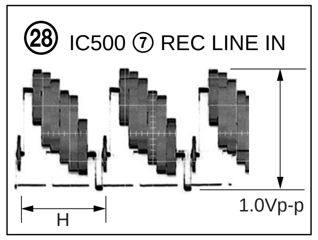
(2/7)



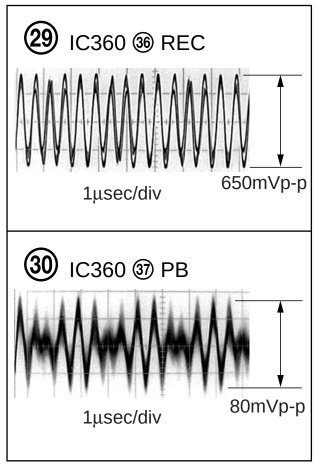
(3/7)



(4/7)

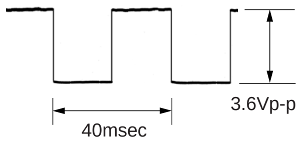


(6/7)

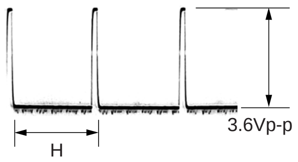


RP-235 BOARD

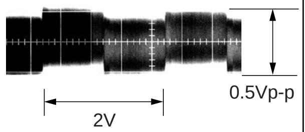
① CN260 ④ REC



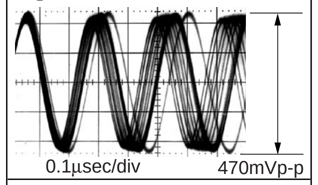
② IC260 ⑤ REC/PB



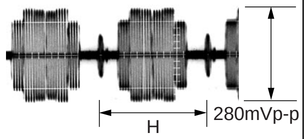
③ IC260 ⑦ PB



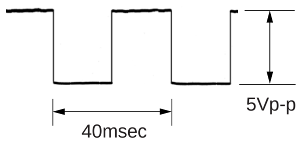
④ IC260 ⑨ REC



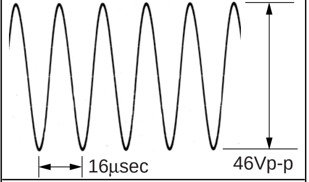
⑤ IC260 ⑩ REC



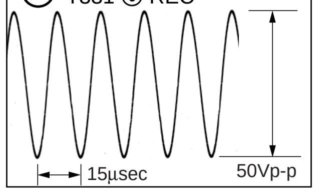
⑥ IC340 ①



⑦ T321 ⑥ REC



⑧ T331 ⑥ REC

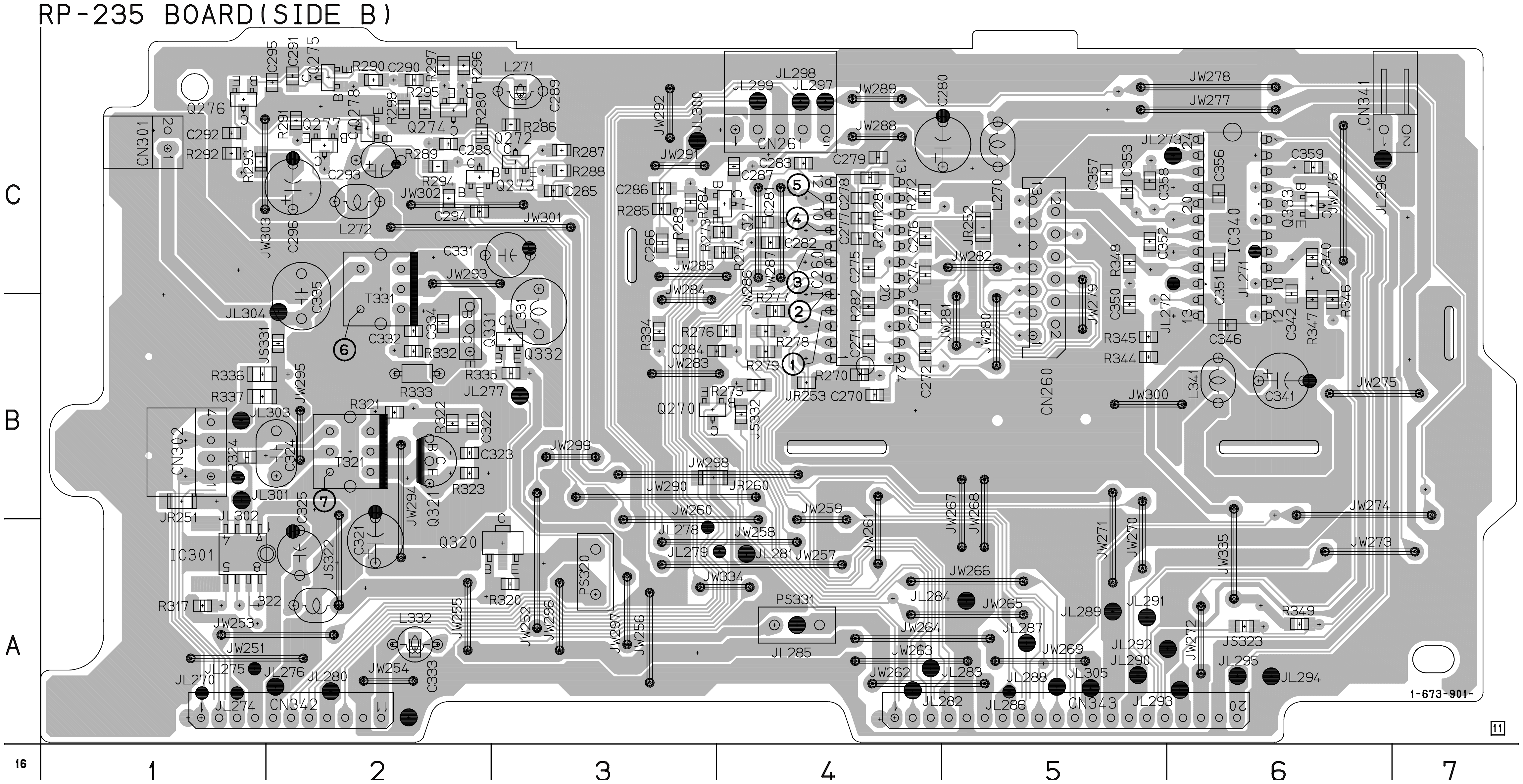


RP-235 (REC/PB HEAD AMP) PRINTED WIRING BOARD

— Ref. No. RP-235 Board; 3,000 Series —

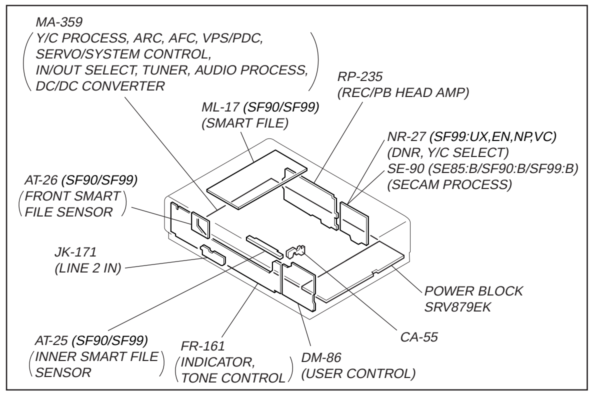
RP-235 BOARD

CN260	B-5
CN261	C-4
CN301	C-1
CN302	B-1
CN341	C-6
CN342	A-2
CN343	A-5
CN970	A-1
IC260	C-4
IC301	A-1
IC340	C-6
IC970	A-2
Q270	B-3
Q271	C-4
Q272	C-3
Q273	C-3
Q274	C-1
Q275	C-1
Q277	C-1
Q278	C-1
Q320	A-2
Q321	B-2
Q331	B-2
Q332	B-3
Q333	C-6
Q970	B-2
Q971	A-2
Q972	B-1
Q973	A-1
Q974	A-1
Q975	B-1
Q976	B-1


RP-235 BOARD(SIDE B)
C
B
A
1
2
3
4
5
6
7
16
1-673-901-
11
CN301
CN302
CN341
CN342
CN343
CN261
CN260
IC301
IC340
T331
T321
Q270
Q272
Q273
Q274
Q275
Q276
Q277
Q278
Q320
Q321
Q331
Q332
Q333
L271
L272
L322
L332
L341
L270
PS320
PS331
JL298
JL299
JL297
JW278
JW277
JW289
JW288
JW292
JL300
JW291
JW301
JW302
JW303
JL304
JL303
JL301
JL302
JR251
JW299
JW298
JW290
JR260
JW260
JW259
JL278
JW258
JL279
JL281
JW257
JW334
JW266
JL284
JW265
JL289
JL291
R349
JS323
JL295
JL294
JW274
JW273
JW275
JW300
JL273
JL296
JW276
JL285
JW264
JW263
JW262
JL283
JL282
JL286
JL288
JL305
JL293
JL287
JW269
JL292
JL290
JW253
JW251
JL275
JL276
JL270
JL274
JL280
JW254
JW255
JW252
JW296
JW297
JW256
JL277
JW293
JW294
JW295
JS331
JS332
JS322
JW267
JW268
JW271
JW270
JW335
JW272
JW261
JW279
JW280
JW281
JW282
JW283
JW284
JW285
JW286
JW287
JR252
JR253
JL271
JL272
1
2
3
4
5
6
7

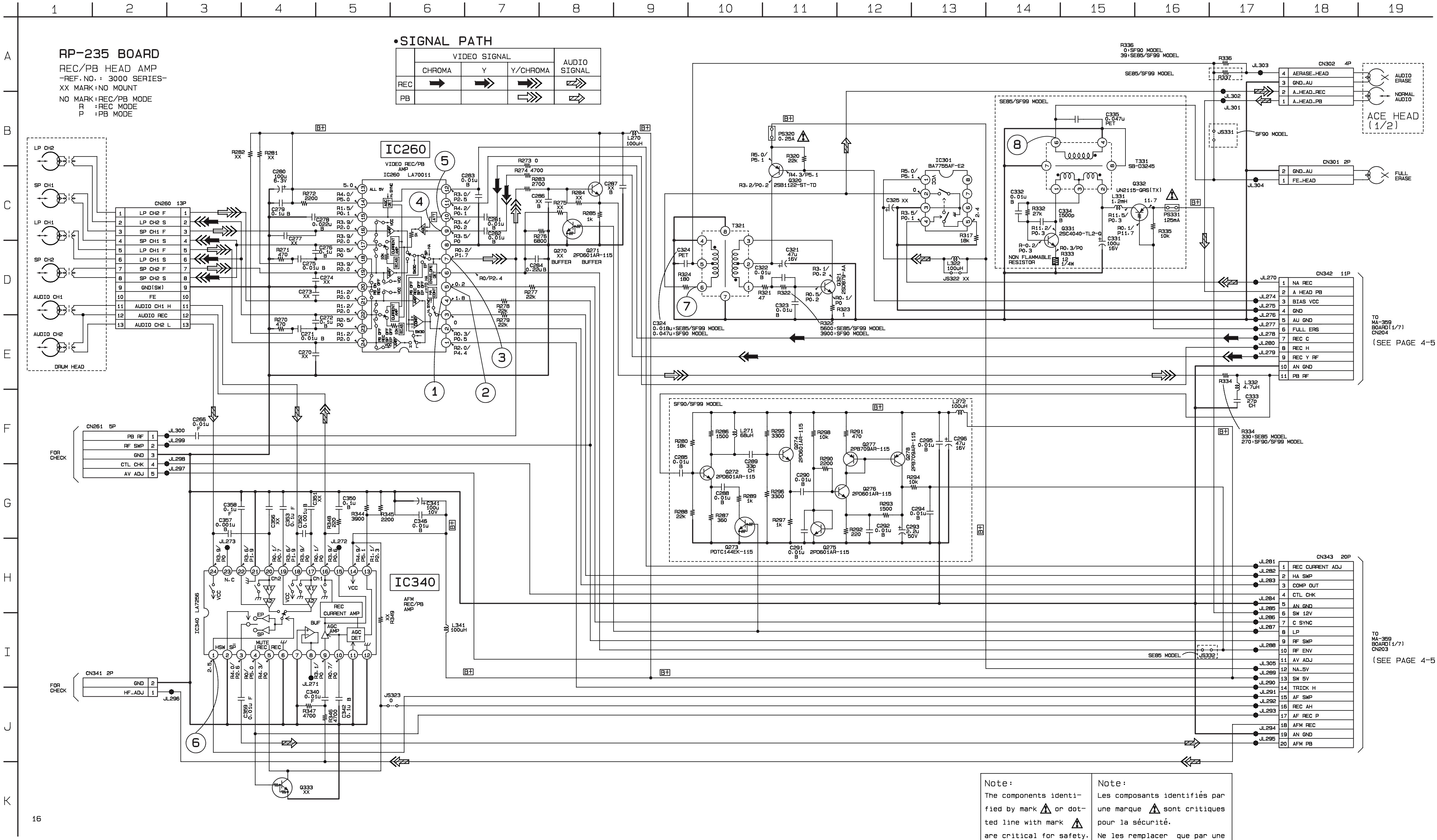
For printed wiring boards

There are few cases that the part printed on this diagram isn't mounted in this model.


MA-359
Y/C PROCESS, ARC, AFC, VPS/PDC, SERVO/SYSTEM CONTROL, IN/OUT SELECT, TUNER, AUDIO PROCESS, DC/DC CONVERTER
RP-235 (REC/PB HEAD AMP)
ML-17 (SF90/SF99) (SMART FILE)
NR-27 (SF99:UX,EN,NP,VC) (DNR, Y/C SELECT)
SE-90 (SE85:B/SF90:B/SF99:B) (SECAM PROCESS)
AT-26 (SF90/SF99) (FRONT SMART FILE SENSOR
JK-171 (LINE 2 IN)
POWER BLOCK SRV879EK
CA-55
AT-25 (SF90/SF99) (INNER SMART FILE SENSOR
FR-161 (INDICATOR, TONE CONTROL
DM-86 (USER CONTROL)

For schematic diagram

- Refer to page 4-23 for waveforms.

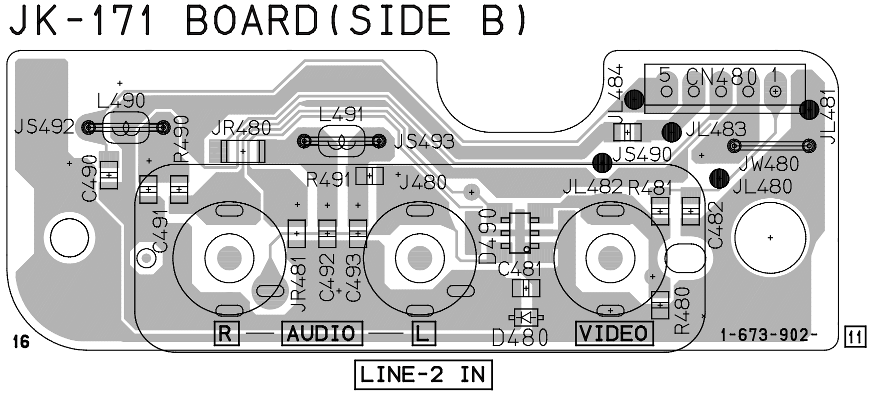

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19
A B C D E F G H I J K
RP-235 BOARD
REC/PB HEAD AMP
-REF. NO. : 3000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
•SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
REC
PB
IC260
VIDEO REC/PB AMP
IC260 LA70011
IC340
AFM REC/PB AMP
IC340 LA7256
IC301 BA7755AF-E2
T321
T331 SB-03245
Q320 2SB1122-ST-TD
Q332 UN2115-QRS(TX)
Q331 2SC4040-TL2-Q
Q270 XX BUFFER
Q271 2PD601AR-115 BUFFER
Q333 XX
NON FLAMMABLE RESISTOR
PS320 0.25A
PS331 125mA
CN260 13P
LP CH2 F
LP CH2 S
SP CH1 F
SP CH1 S
LP CH1 F
LP CH1 S
SP CH2 F
SP CH2 S
GND(SW)
FE
AUDIO CH1 H
AUDIO REC
AUDIO CH2 L
LP CH2
SP CH1
LP CH1
SP CH2
AUDIO CH1
AUDIO CH2
DRUM HEAD
CN261 5P
PB RF
RF SWP
GND
CTL CHK
AV ADJ
FOR CHECK
CN341 2P
GND
HF_ADJ
CN302 4P
AERASE_HEAD
GND_AU
A_HEAD_REC
A_HEAD_PB
AUDIO ERASE
NORMAL AUDIO
ACE HEAD (1/2)
CN301 2P
GND_AU
FE_HEAD
FULL ERASE
SE85/SF99 MODEL
SF90 MODEL
SF90/SF99 MODEL
SE85 MODEL
R336 0:SF90 MODEL 39:SE85/SF99 MODEL
C324 0.018u:SE85/SF99 MODEL 0.047u:SF90 MODEL
R322 5600:SE85/SF99 MODEL 3900:SF90 MODEL
R334 330:SE85 MODEL 270:SF90/SF99 MODEL
CN342 11P
NA REC
A HEAD PB
BIAS VCC
GND
AU GND
FULL ERS
REC C
REC H
REC Y RF
AN GND
PB RF
TO MA-359 BOARD(1/7) CN204
(SEE PAGE 4-5)
CN343 20P
REC CURRENT ADJ
HA SWP
COMP OUT
CTL CHK
AN GND
SW 12V
C SYNC
LP
RF SWP
RF ENV
AV ADJ
NA_5V
SW 5V
TRICK H
AF SWP
REC AH
AF REC P
AFM REC
AN GND
AFM PB
TO MA-359 BOARD(1/7) CN203
(SEE PAGE 4-5)
REC CURRENT AMP
AGC AMP
AGC DET
BUF
MUTE
HSW
EP
SP
① ② ③ ④ ⑤ ⑥ ⑦ ⑧
16

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

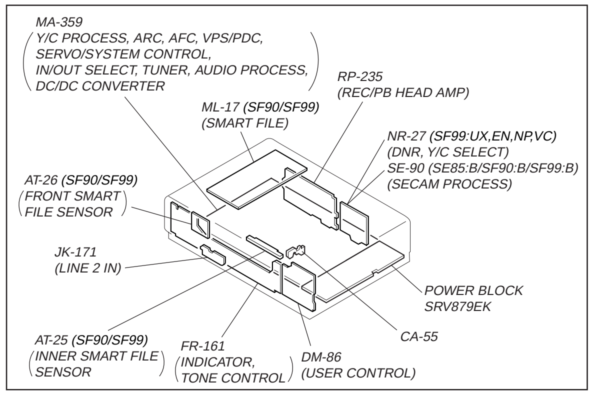
JK-171 (LINE 2 IN) PRINTED WIRING BOARD

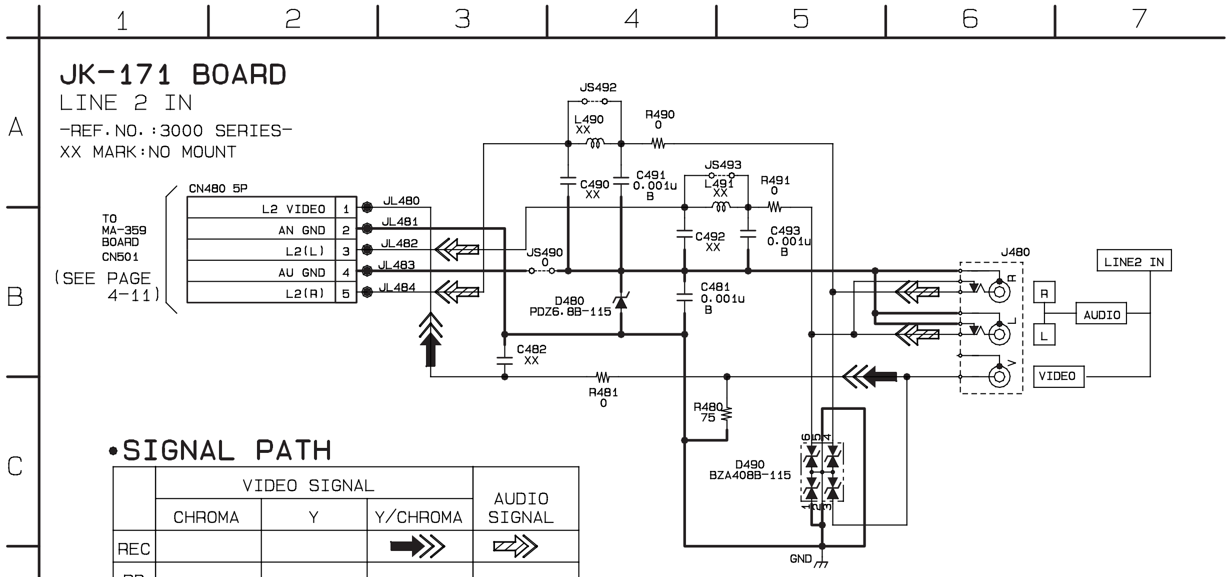
— Ref. No. JK-171 Board; 3,000 Series —


JK-171 BOARD(SIDE B)
L490
JS492
C490
C491
R490
JR480
L491
JS493
R491
J480
JR481
C492
C493
D490
C481
D480
5 CN480 1
JL484
JL483
JS490
JW480
JL482
R481
JL480
C482
JL481
R480
R
AUDIO
L
VIDEO
LINE-2 IN
1-673-902-
11
16

For printed wiring boards

There are few cases that the part printed on this diagram isn't mounted in this model.


MA-359
(Y/C PROCESS, ARC, AFC, VPS/PDC, SERVO/SYSTEM CONTROL, IN/OUT SELECT, TUNER, AUDIO PROCESS, DC/DC CONVERTER)
RP-235
(REC/PB HEAD AMP)
ML-17 (SF90/SF99)
(SMART FILE)
NR-27 (SF99:UX,EN,NP,VC)
(DNR, Y/C SELECT)
SE-90 (SE85:B/SF90:B/SF99:B)
(SECAM PROCESS)
AT-26 (SF90/SF99)
(FRONT SMART FILE SENSOR)
JK-171
(LINE 2 IN)
POWER BLOCK
SRV879EK
CA-55
AT-25 (SF90/SF99)
(INNER SMART FILE SENSOR)
FR-161
(INDICATOR, TONE CONTROL)
DM-86
(USER CONTROL)

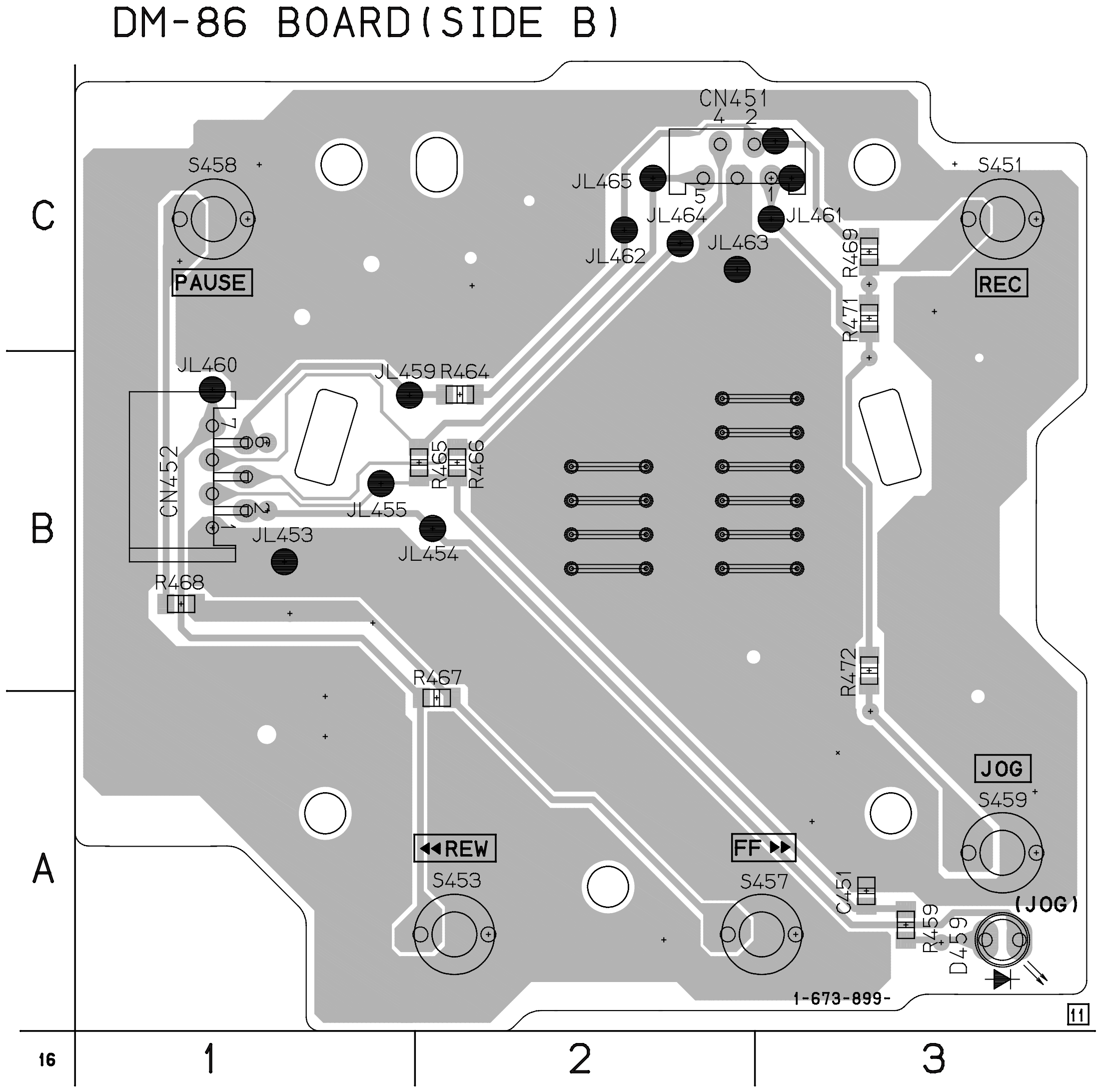

1
2
3
4
5
6
7
A
B
C
D
JK-171 BOARD
LINE 2 IN
-REF.NO.:3000 SERIES-
XX MARK:NO MOUNT
TO MA-359 BOARD CN501
(SEE PAGE 4-11)
CN480 5P
L2 VIDEO 1
AN GND 2
L2(L) 3
AU GND 4
L2(R) 5
JL480
JL481
JL482
JL483
JL484
JS492
L490 XX
R490 0
C490 XX
C491 0.001u B
JS493
L491 XX
R491 0
C492 XX
C493 0.001u B
JS490 0
D480 PDZ6.8B-115
C481 0.001u B
C482 XX
R481 0
R480 75
D490 BZA408B-115
GND
J480
R
L
V
LINE2 IN
AUDIO
VIDEO
16

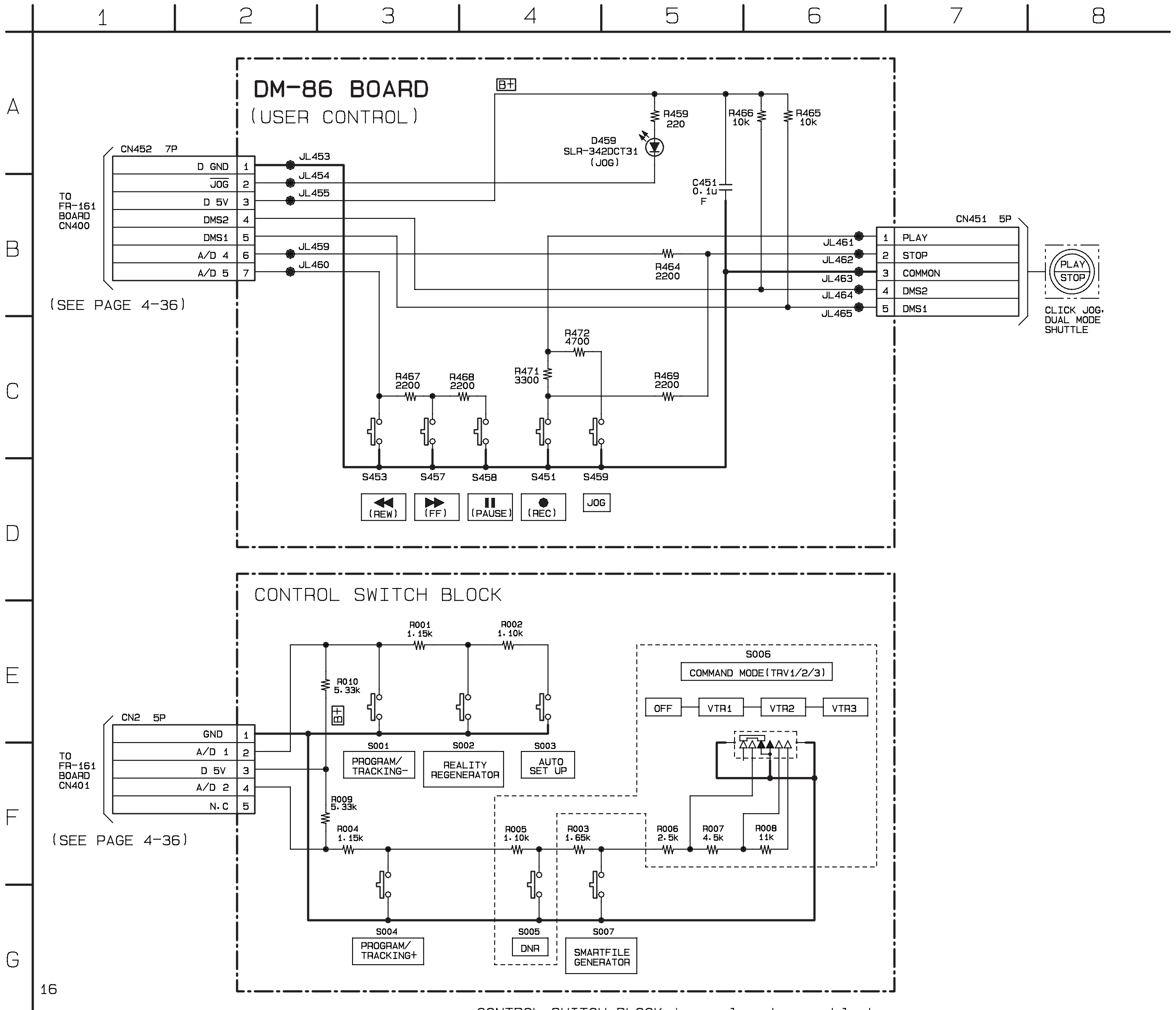
•SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡》	⇨》
PB				

DM-86 (USER CONTROL) PRINTED WIRING BOARD

— Ref. No. DM-86 Board; 3,000 Series —

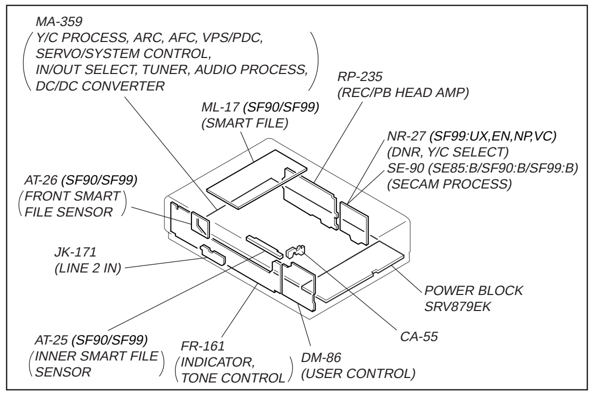

DM-86 BOARD(SIDE B)
C
B
A
CN451
4 2
5 1
S458
S451
JL465
JL464
JL461
JL462
JL463
R469
R471
PAUSE
REC
JL460
JL459
R464
CN452
R465
R466
JL455
JL453
JL454
R468
R467
R472
JOG
S459
REW
FF
S453
S457
C451
R459
D459
(JOG)
1-673-899-
11
16
1
2
3


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
DM-86 BOARD
(USER CONTROL)
B+
CN452 7P
D GND
JOG
D 5V
DMS2
DMS1
A/D 4
A/D 5
TO FR-161 BOARD CN400
(SEE PAGE 4-36)
JL453
JL454
JL455
JL459
JL460
R459 220
D459 SLR-342DCT31 (JOG)
R466 10k
R465 10k
C451 0.1u F
R464 2200
CN451 5P
JL461
JL462
JL463
JL464
JL465
PLAY
STOP
COMMON
DMS2
DMS1
PLAY
STOP
CLICK JOG, DUAL MODE SHUTTLE
R472 4700
R467 2200
R468 2200
R471 3300
R469 2200
S453
S457
S458
S451
S459
(REW)
(FF)
(PAUSE)
(REC)
JOG
CONTROL SWITCH BLOCK
R001 1.15k
R002 1.10k
R010 5.33k
B+
S006
COMMAND MODE(TRV1/2/3)
OFF
VTR1
VTR2
VTR3
CN2 5P
GND
A/D 1
D 5V
A/D 2
N.C
TO FR-161 BOARD CN401
(SEE PAGE 4-36)
S001
PROGRAM/ TRACKING-
S002
REALITY REGENERATOR
S003
AUTO SET UP
R009 5.33k
R004 1.15k
R005 1.10k
R003 1.65k
R006 2.5k
R007 4.5k
R008 11k
S004
PROGRAM/ TRACKING+
S005
DNR
S007
SMARTFILE GENERATOR
16

• CONTROL SWITCH BLOCK is replaced as a block.
So that this PRINTED WIRING BOARD is omitted.

For printed wiring boards

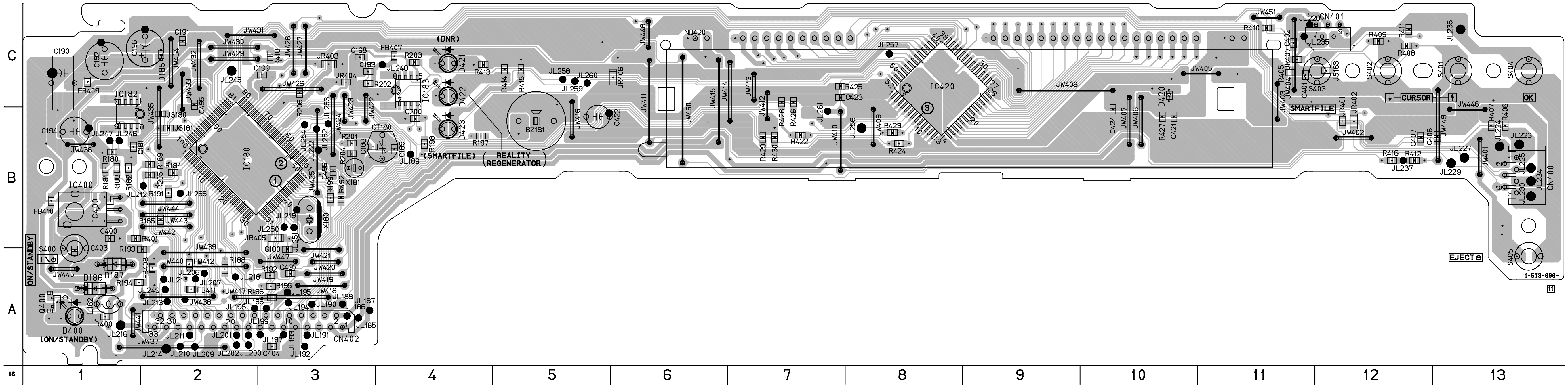
There are few cases that the part printed on this diagram isn’t mounted in this model.


MA-359
Y/C PROCESS, ARC, AFC, VPS/PDC, SERVO/SYSTEM CONTROL, IN/OUT SELECT, TUNER, AUDIO PROCESS, DC/DC CONVERTER
RP-235 (REC/PB HEAD AMP)
ML-17 (SF90/SF99) (SMART FILE)
NR-27 (SF99:UX,EN,NP,VC) (DNR, Y/C SELECT)
SE-90 (SE85:B/SF90:B/SF99:B) (SECAM PROCESS)
AT-26 (SF90/SF99) (FRONT SMART FILE SENSOR
JK-171 (LINE 2 IN)
POWER BLOCK SRV879EK
CA-55
AT-25 (SF90/SF99) (INNER SMART FILE SENSOR
FR-161 (INDICATOR, TONE CONTROL
DM-86 (USER CONTROL)

FR-161 (MODE CONTROL, FL DRIVE) PRINTED WIRING BOARD

— Ref. No. FR-161 Board; 3,000 Series —

FR-161 BOARD(SIDE B)

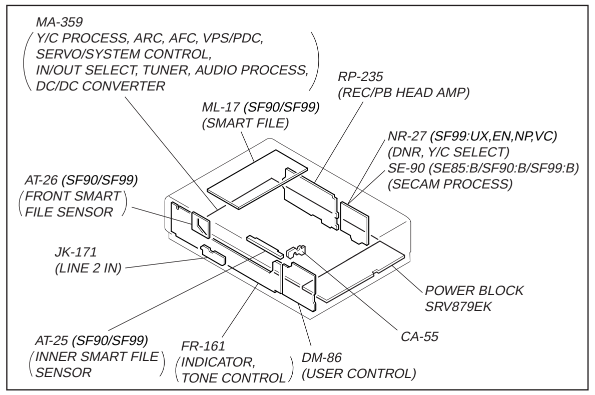

C
B
A
(DNR)
(SMARTFILE)
(REALITY REGENERATOR)
ON/STANDBY
(ON/STANDBY)
SMARTFILE
CURSOR
OK
EJECT
IC180
IC420
IC400
IC182
IC183
CN400
CN401
CN402
ND420
BZ181
X180
1-673-898-
11
16
1
2
3
4
5
6
7
8
9
10
11
12
13

FR-161 BOARD

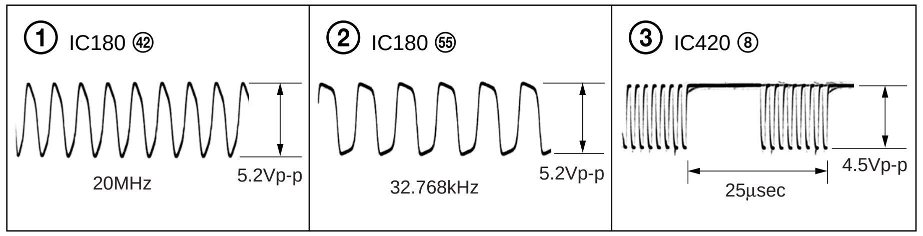
CN400	B-13
CN401	C-12
CN402	A-3
D185	C-2
D186	A-1
D187	A-1
D400	A-1
D420	C-10
D421	C-4
D422	C-4
D423	B-4
IC180	B-2
IC182	C-1
IC183	C-4
IC400	B-1
IC420	C-8
Q400	A-1

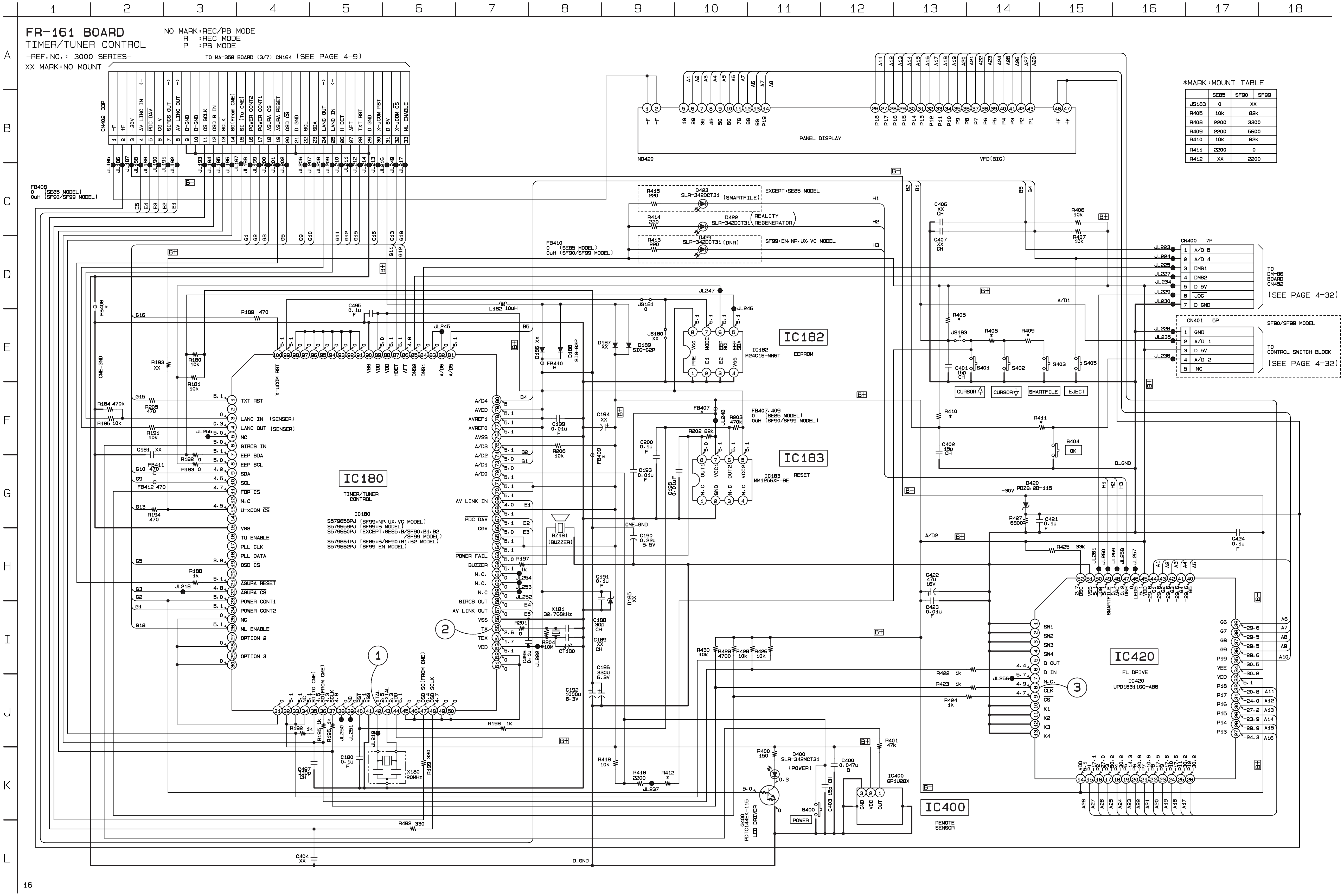
For printed wiring boards

There are few cases that the part printed on this diagram isn't mounted in this model.


MA-359
(Y/C PROCESS, ARC, AFC, VPS/PDC, SERVO/SYSTEM CONTROL, IN/OUT SELECT, TUNER, AUDIO PROCESS, DC/DC CONVERTER)
RP-235
(REC/PB HEAD AMP)
ML-17 (SF90/SF99)
(SMART FILE)
NR-27 (SF99:UX,EN,NP,VC)
(DNR, Y/C SELECT)
SE-90 (SE85:B/SF90:B/SF99:B)
(SECAM PROCESS)
AT-26 (SF90/SF99)
(FRONT SMART FILE SENSOR)
JK-171
(LINE 2 IN)
POWER BLOCK
SRV879EK
CA-55
AT-25 (SF90/SF99)
(INNER SMART FILE SENSOR)
FR-161
(INDICATOR, TONE CONTROL)
DM-86
(USER CONTROL)

FR-161 BOARD
REC/PB





FR-161 BOARD
TIMER/TUNER CONTROL
-REF.NO.: 3000 SERIES-
XX MARK:NO MOUNT

NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE

*MARK:MOUNT TABLE

	SE85	SF90	SF99
JS183	0	XX	
R405	10k	82k	
R408	2200	3300	
R409	2200	5600	
R410	10k	82k	
R411	2200	0	
R412	XX	2200	

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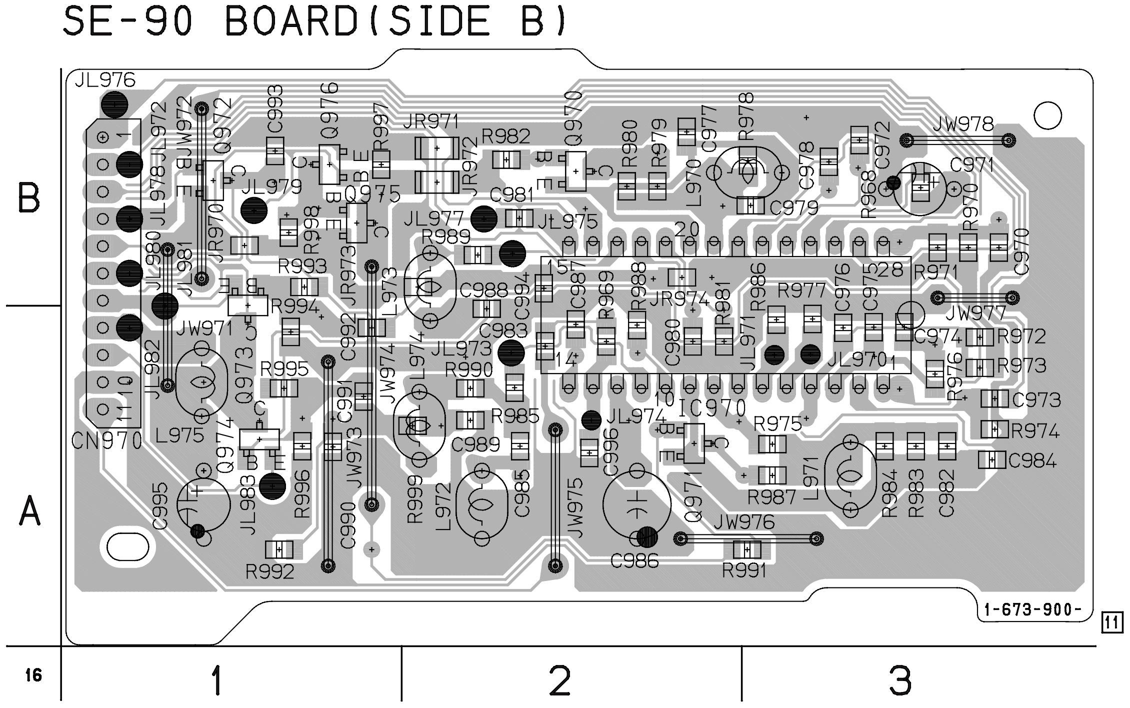
11
12
13
14
15
16
17
18
A
B
C
D
E
F
G
H
I
J
K
L
TO MA-359 BOARD (3/7) CN164 (SEE PAGE 4-9)
CN402 33P
PANEL DISPLAY
ND420
VFD(BIG)
FB408
0 (SE85 MODEL)
0uH (SF90/SF99 MODEL)
FB410
0 (SE85 MODEL)
0uH (SF90/SF99 MODEL)
D423 SLR-342DCT31 (SMARTFILE)
D422 SLR-342DCT31 (REALITY REGENERATOR)
D421 SLR-342DCT31 (DNR)
EXCEPT:SE85 MODEL
SF99:EN, NP, UX, VC MODEL
CN400 7P
A/D 5
A/D 4
DMS1
DMS2
D 5V
JOG
D GND
TO DM-86 BOARD CN452
(SEE PAGE 4-32)
CN401 5P
SF90/SF99 MODEL
GND
A/D 1
D 5V
A/D 2
NC
TO CONTROL SWITCH BLOCK
(SEE PAGE 4-32)
IC182
M24C16-MN6T
EEPROM
IC183
MM1256XF-BE
RESET
FB407, 409
0 (SE85 MODEL)
0uH (SF90/SF99 MODEL)
IC180
TIMER/TUNER CONTROL
IC180
S579658PJ (SF99:NP, UX, VC MODEL)
S579659PJ (SF99:B MODEL)
S579660PJ (EXCEPT:SE85:B/SF90:B1, B2 /SF99 MODEL)
S579661PJ (SE85:B/SF90:B1, B2 MODEL)
S579662PJ (SF99 EN MODEL)
BZ181 (BUZZER)
X181 32.768kHz
X180 20MHz
CURSOR
SMARTFILE
EJECT
OK
S401
S402
S403
S405
S404
S400
POWER
D400 SLR-342MCT31 (POWER)
Q400 PDTC144EK-115 LED DRIVER
IC400 GP1U28X
IC400
REMOTE SENSOR
D420 PDZ8.2B-115
IC420
FL DRIVE
IC420
UPD16311GC-AB6
D.GND
CME.GND
16

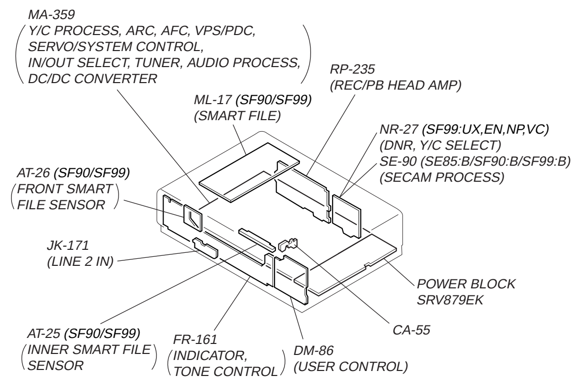
SE-90 (SECAM CHROMA PROCESS) PRINTED WIRING BOARD

— Ref. No. SE-90 Board; 3,000 Series —


SE-90 BOARD(SIDE B)
B
A
16
1
2
3
11
1-673-900-
CN970
JL976
JL978
JL972
JW972
Q972
C993
Q976
R997
JR971
R982
Q970
R980
R979
C977
R978
C978
R968
C972
JW978
C971
JL979
R998
Q975
JR972
C981
L970
C979
R970
JR970
JL980
JL981
JL977
R989
JL975
C970
R993
R994
JR973
L973
C988
C994
C987
R969
R988
JR974
R981
R986
R977
C976
C975
R971
JW977
C983
C980
JL971
JL9701
C974
R972
JW971
Q973
R995
C992
JW974
L974
JL973
R990
R976
R973
JL982
L975
C991
JW973
R985
JL974
IC970
R975
C973
R974
Q974
C989
C996
C984
C995
JL983
R996
C990
R999
L972
C985
JW975
Q971
R987
L971
R984
R983
C982
JW976
R992
C986
R991
1
10
14
15
20
28

For printed wiring boards

There are few cases that the part printed on this diagram isn’t mounted in this model.


MA-359
Y/C PROCESS, ARC, AFC, VPS/PDC, SERVO/SYSTEM CONTROL, IN/OUT SELECT, TUNER, AUDIO PROCESS, DC/DC CONVERTER
RP-235
(REC/PB HEAD AMP)
ML-17 (SF90/SF99)
(SMART FILE)
NR-27 (SF99:UX,EN,NP,VC)
(DNR, Y/C SELECT)
SE-90 (SE85:B/SF90:B/SF99:B)
(SECAM PROCESS)
AT-26 (SF90/SF99)
FRONT SMART FILE SENSOR
JK-171
(LINE 2 IN)
POWER BLOCK
SRV879EK
CA-55
AT-25 (SF90/SF99)
INNER SMART FILE SENSOR
FR-161
INDICATOR, TONE CONTROL
DM-86
(USER CONTROL)

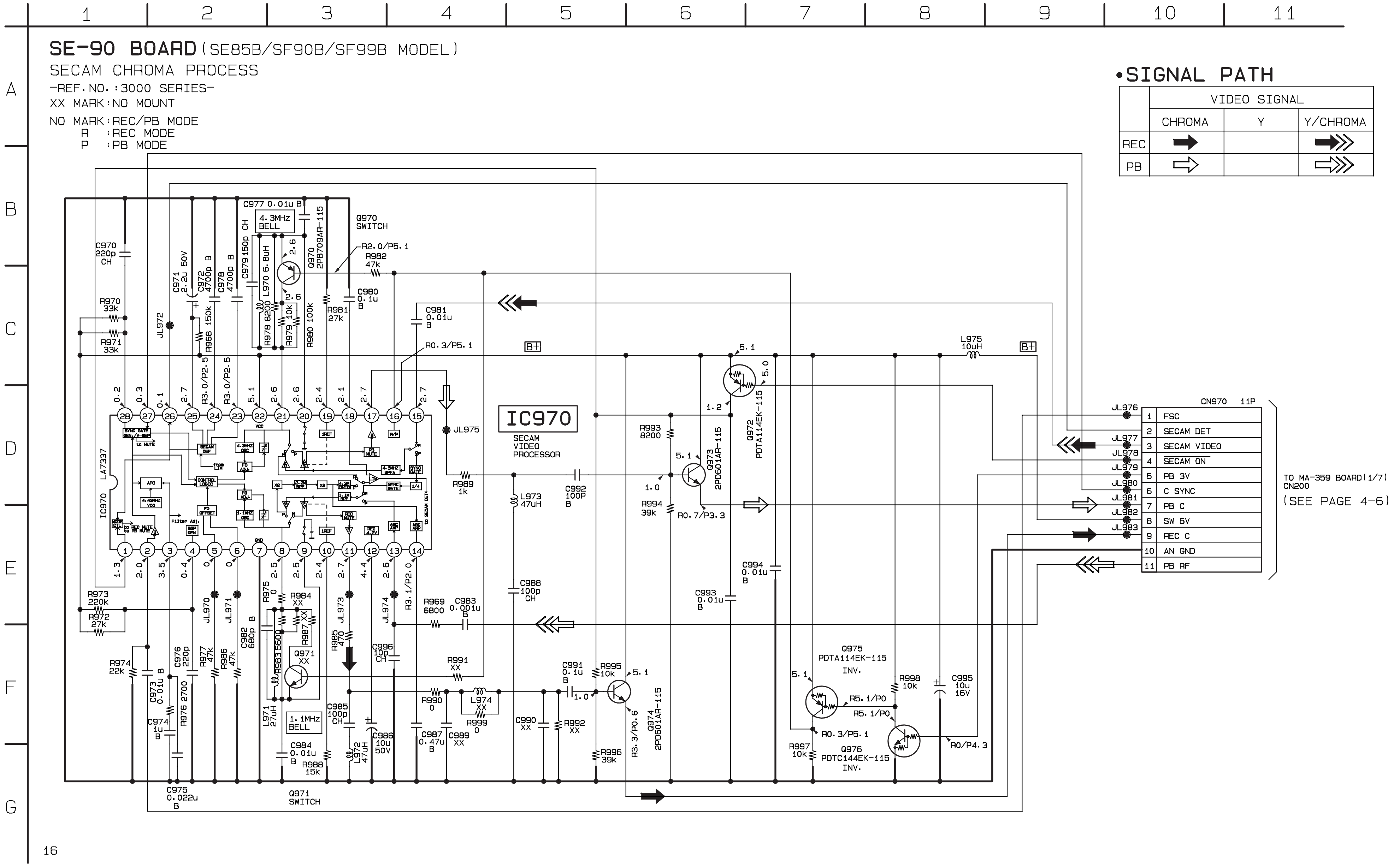
SE-90 BOARD (SE85B/SF90B/SF99B MODEL)

SECAM CHROMA PROCESS

-REF. NO. : 3000 SERIES-

XX MARK : NO MOUNT

NO MARK : REC/PB MODE
R : REC MODE
P : PB MODE


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
16
IC970
SECAM VIDEO PROCESSOR
IC970 LA7337
Q970 SWITCH
Q970 2PB709AR-115
Q971 SWITCH
Q972 PDTA114EK-115
Q973 2PD601AR-115
Q974 2PD601AR-115
Q975 PDTA114EK-115 INV.
Q976 PDTC144EK-115 INV.
4.3MHz BELL
1.1MHz BELL
L975 10uH
B+
CN970 11P
1 FSC
2 SECAM DET
3 SECAM VIDEO
4 SECAM ON
5 PB 3V
6 C SYNC
7 PB C
8 SW 5V
9 REC C
10 AN GND
11 PB RF
TO MA-359 BOARD(1/7) CN200
(SEE PAGE 4-6)

•SIGNAL PATH

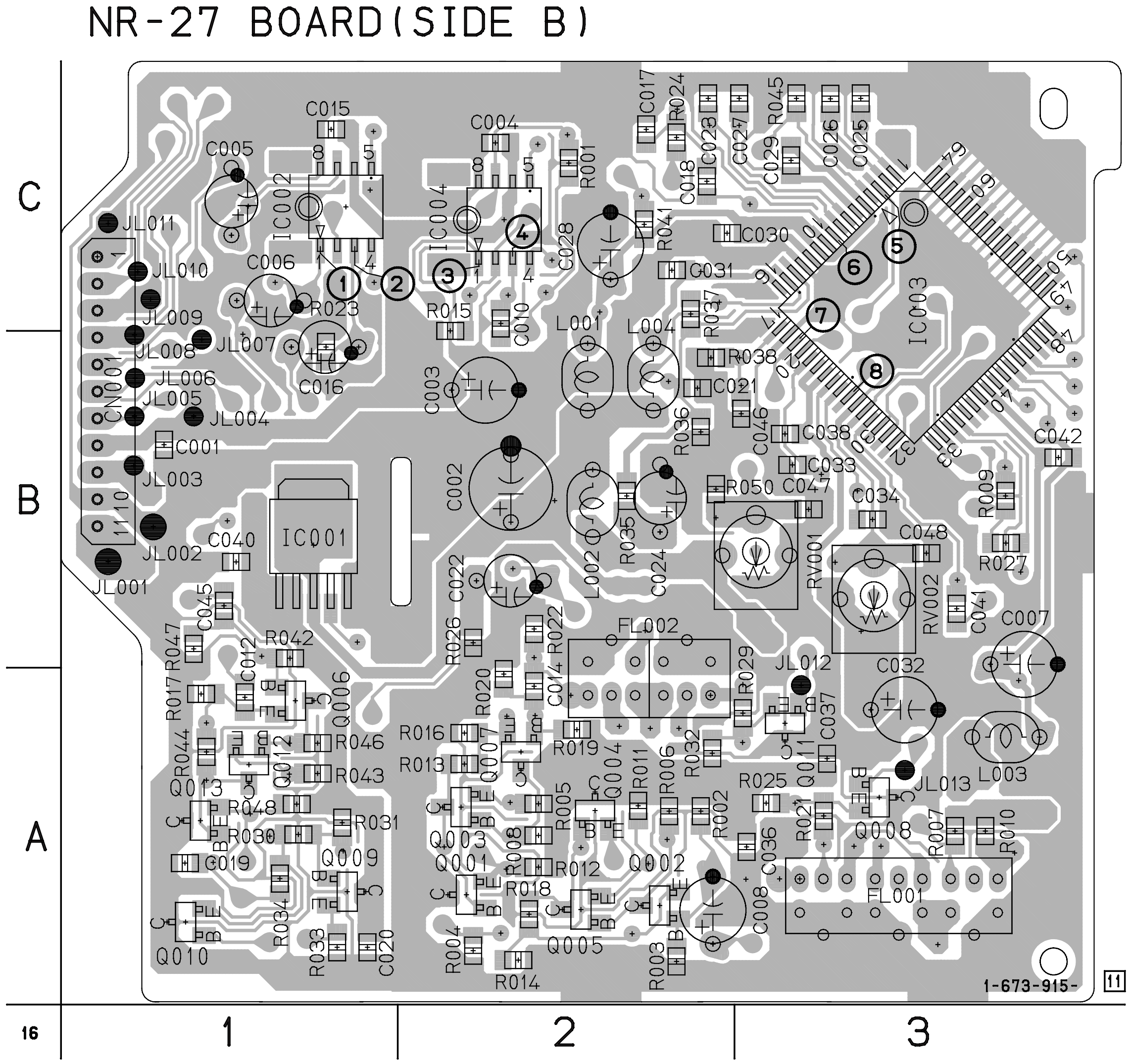
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		➡≫
PB	⇨		⇨≫

NR-27 (DNR, Y/C SELECT) PRINTED WIRING BOARD

— Ref. No. NR-27 Board; 2,000 Series —

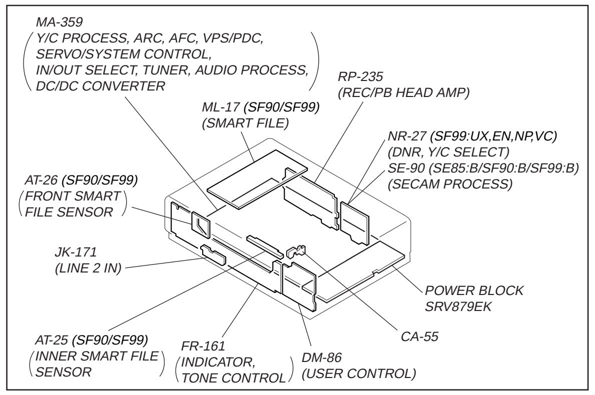
NR-27 BOARD

CN001	B-1
IC001	B-1
IC002	C-1
IC003	C-3
IC004	C-2
Q001	A-2
Q002	A-2
Q003	A-2
Q004	A-2
Q005	A-2
Q006	A-1
Q008	A-3
Q009	A-1
Q010	A-1
Q011	A-3
Q012	A-1
Q013	A-1
R021	A-3
R025	A-3
R029	A-3

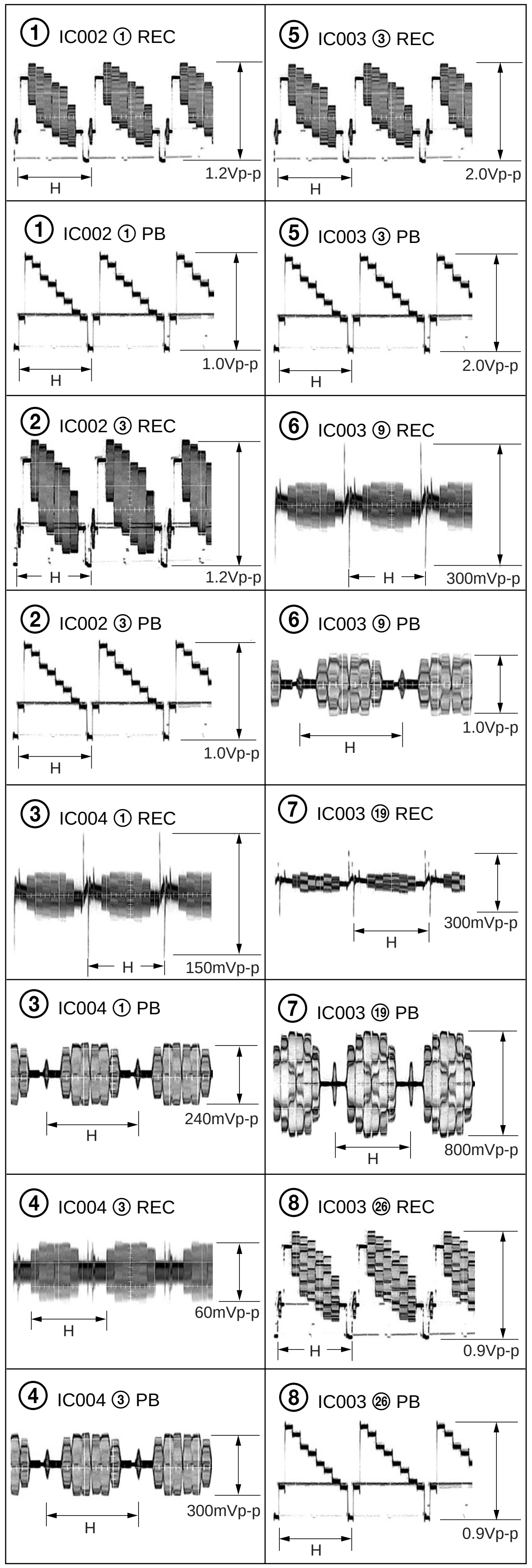

NR-27 BOARD(SIDE B)
C
B
A
1
2
3
16
11
1-673-915-
CN001
IC001
IC002
IC003
IC004
FL001
FL002
RV001
RV002
L001
L002
L003
L004
JL001
JL002
JL003
JL004
JL005
JL006
JL007
JL008
JL009
JL010
JL011
JL012
JL013
Q001
Q002
Q003
Q004
Q005
Q006
Q008
Q009
Q010
Q011
Q012
Q013
①
②
③
④
⑤
⑥
⑦
⑧

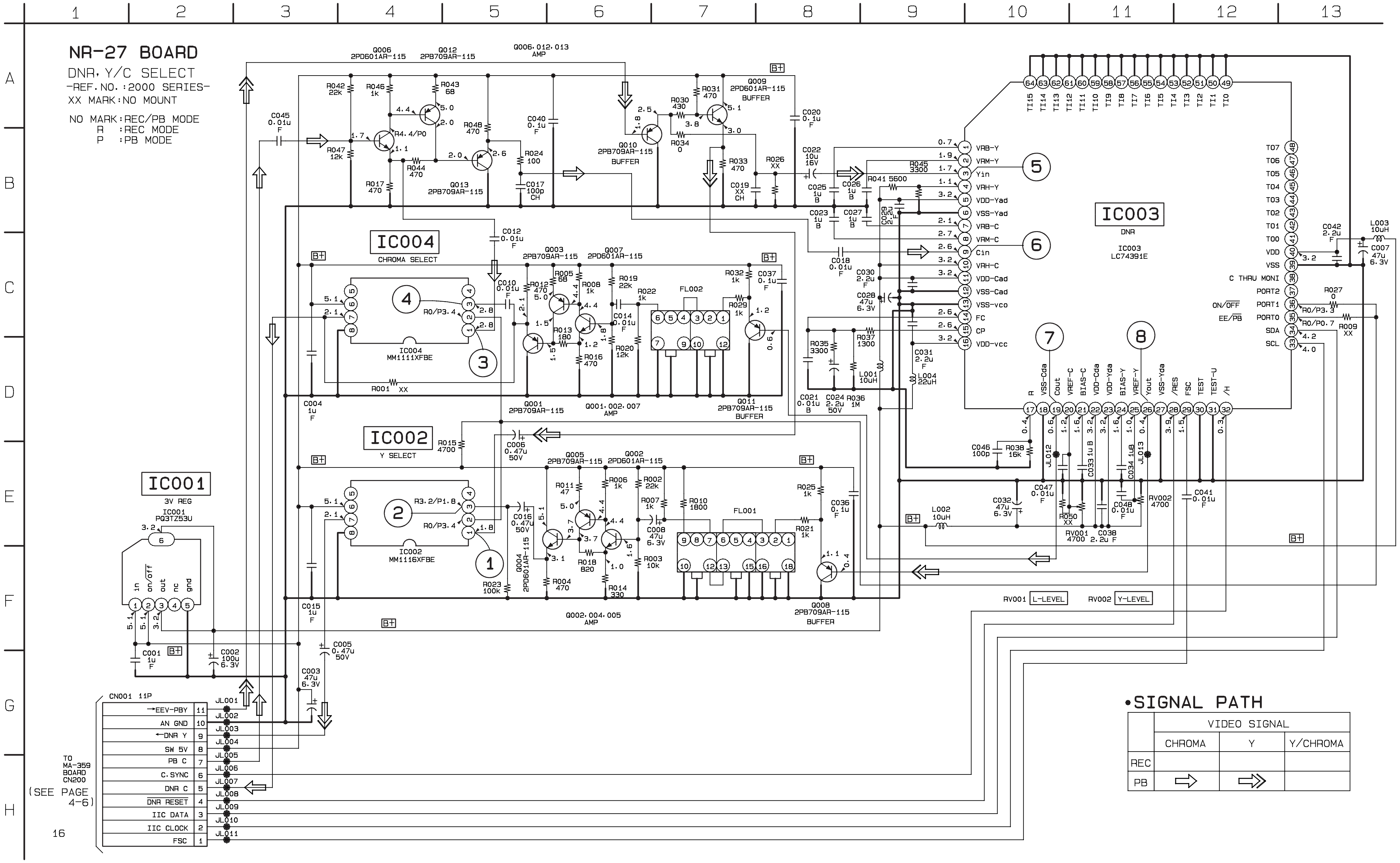
For printed wiring boards

There are few cases that the part printed on this diagram isn’t mounted in this model.


MA-359
(Y/C PROCESS, ARC, AFC, VPS/PDC, SERVO/SYSTEM CONTROL, IN/OUT SELECT, TUNER, AUDIO PROCESS, DC/DC CONVERTER)
RP-235
(REC/PB HEAD AMP)
ML-17 (SF90/SF99)
(SMART FILE)
NR-27 (SF99:UX,EN,NP,VC)
(DNR, Y/C SELECT)
SE-90 (SE85:B/SF90:B/SF99:B)
(SECAM PROCESS)
AT-26 (SF90/SF99)
(FRONT SMART FILE SENSOR)
JK-171
(LINE 2 IN)
POWER BLOCK
SRV879EK
CA-55
AT-25 (SF90/SF99)
(INNER SMART FILE SENSOR)
FR-161
(INDICATOR, TONE CONTROL)
DM-86
(USER CONTROL)

NR-27 BOARD



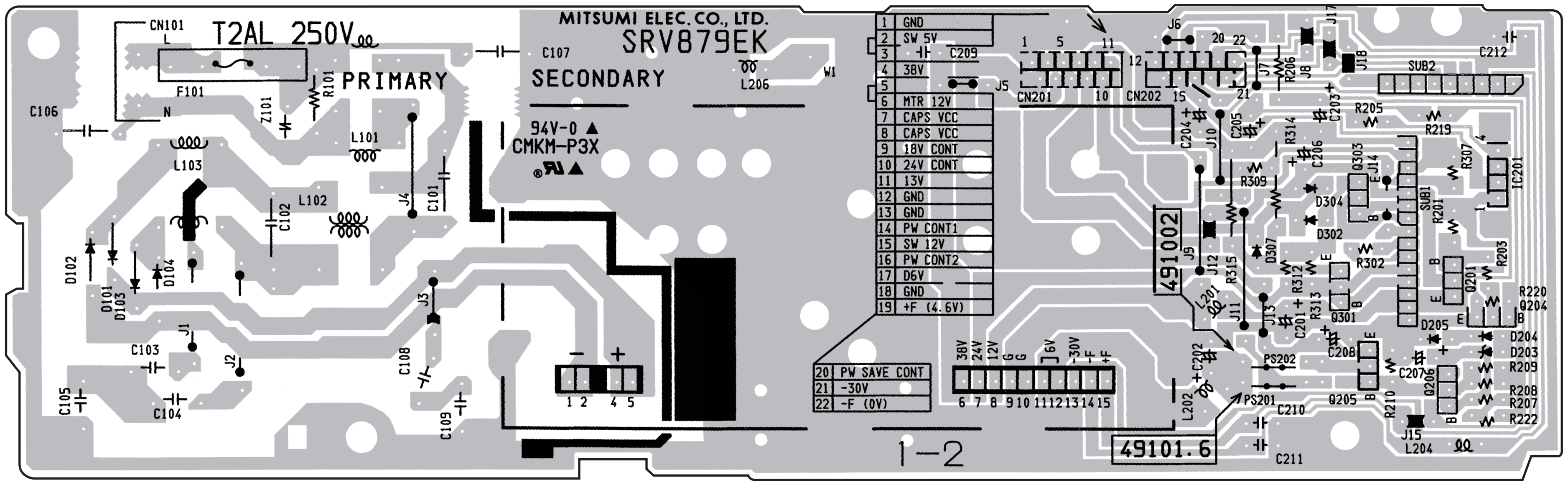

NR-27 BOARD
DNR, Y/C SELECT
-REF. NO.: 2000 SERIES-
XX MARK: NO MOUNT
NO MARK: REC/PB MODE
R : REC MODE
P : PB MODE
IC001
3V REG
IC001 PQ3TZ53U
IC002
Y SELECT
IC002 MM1116XFBE
IC003
DNR
IC003 LC74391E
IC004
CHROMA SELECT
IC004 MM1111XFBE
Q006, 012, 013 AMP
Q009 2PD601AR-115 BUFFER
Q010 2PB709AR-115 BUFFER
Q001, 002, 007 AMP
Q011 2PB709AR-115 BUFFER
Q002, 004, 005 AMP
Q008 2PB709AR-115 BUFFER
FL001
FL002
CN001 11P
EEV-PBY
AN GND
DNR Y
SW 5V
PB C
C.SYNC
DNR C
DNR RESET
IIC DATA
IIC CLOCK
FSC
TO MA-359 BOARD CN200
(SEE PAGE 4-6)
RV001 L-LEVEL
RV002 Y-LEVEL
•SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
REC
PB

DNR, Y/C SELECT
NR-27

SRV879EK (POWER SUPPLY) PRINTED WIRING BOARD

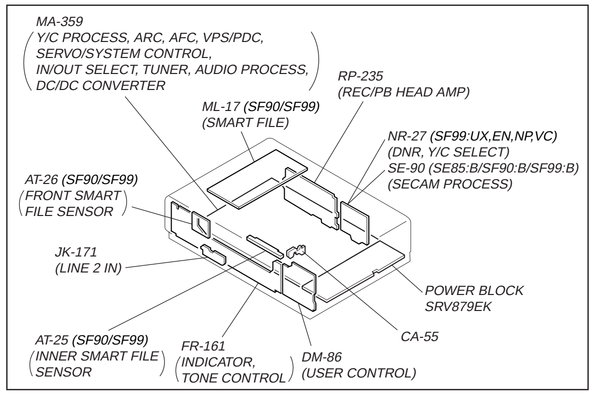
— Ref. No. SRV879EK Board; 4,000 Series —

SRV879EK-A (SIDE B)

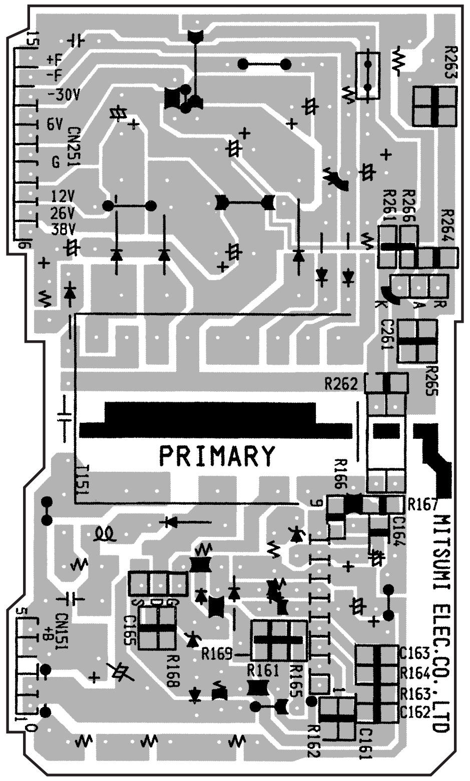

CN101
T2AL 250V
F101
L
N
R101
Z101
PRIMARY
L101
L102
L103
C106
C107
C101
C102
J4
D101
D102
D103
D104
J1
J2
J3
C103
C104
C105
C108
C109
MITSUMI ELEC. CO., LTD.
SRV879EK
SECONDARY
L206
W1
94V-0
CMKM-P3X
1 2 4 5
1 GND
2 SW 5V
3
4 38V
5
6 MTR 12V
7 CAPS VCC
8 CAPS VCC
9 18V CONT
10 24V CONT
11 13V
12 GND
13 GND
14 PW CONT1
15 SW 12V
16 PW CONT2
17 D6V
18 GND
19 +F (4.6V)
20 PW SAVE CONT
21 -30V
22 -F (0V)
C209
J5
CN201
CN202
1 5 11
10 12 15
J6
20 22 21
38V 24V 12V G G 6V -30V -F +F
6 7 8 9 10 11 12 13 14 15
491002
49101.6
1-2
J7
J8
J9
J10
J11
J12
J13
J14
J15
J17
J18
C201
C202
C203
C204
C205
C206
C207
C208
C210
C211
C212
R201
R203
R205
R206
R207
R208
R209
R210
R219
R220
R222
R302
R307
R309
R312
R313
R314
R315
D204
D203
D205
D302
D304
D307
Q201
Q204
Q205
Q206
Q301
Q303
L201
L202
L204
PS201
PS202
SUB1
SUB2
IC201
B E

For printed wiring boards

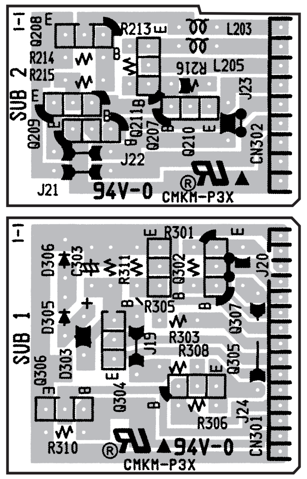
There are few cases that the part printed on this diagram isn't mounted in this model.

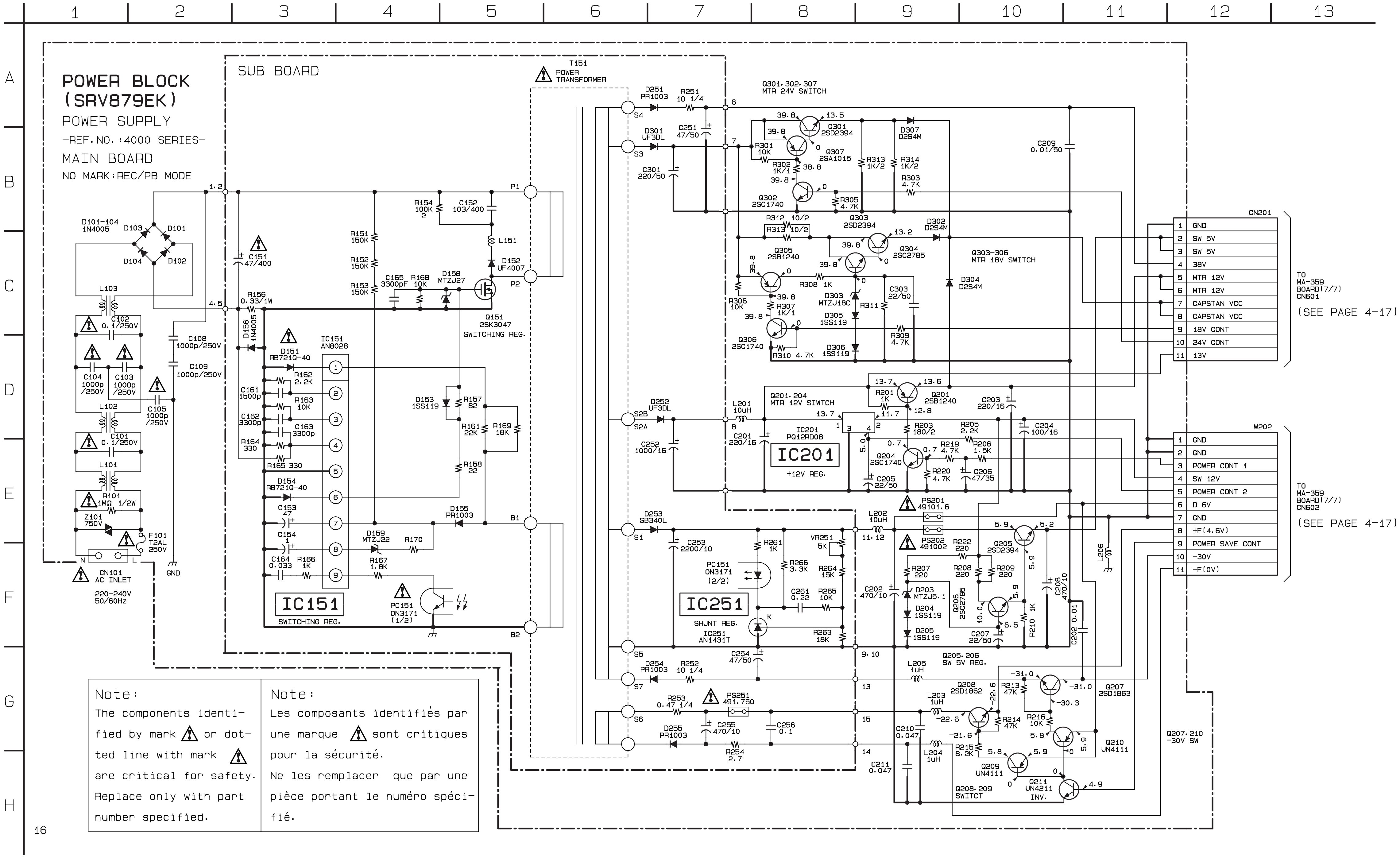

MA-359
Y/C PROCESS, ARC, AFC, VPS/PDC,
SERVO/SYSTEM CONTROL,
IN/OUT SELECT, TUNER, AUDIO PROCESS,
DC/DC CONVERTER
RP-235
(REC/PB HEAD AMP)
ML-17 (SF90/SF99)
(SMART FILE)
NR-27 (SF99:UX,EN,NP,VC)
(DNR, Y/C SELECT)
SE-90 (SE85:B/SF90:B/SF99:B)
(SECAM PROCESS)
AT-26 (SF90/SF99)
(FRONT SMART
FILE SENSOR
JK-171
(LINE 2 IN)
POWER BLOCK
SRV879EK
CA-55
AT-25 (SF90/SF99)
(INNER SMART FILE
SENSOR
FR-161
(INDICATOR,
TONE CONTROL
DM-86
(USER CONTROL)

SRV879EK-B (SIDE B)


CN251
+F
-F
-30V
6V
G
12V
26V
38V
R263
R264
R265
R266
R267
R262
C261
PRIMARY
T151
CN151
R161
R162
R163
R164
R165
R166
R167
R168
R169
C161
C162
C163
C164
C165
MITSUMI ELEC.CO.,LTD.

SRV879 SUB (SIDE B)


SUB 2
R213
L203
R214
R215
R216
L205
Q208
Q209
Q207
Q210
Q211
J21
J22
J23
CN302
94V-0
CMKM-P3X
SUB 1
R301
D306
D305
D303
R311
Q302
R305
R303
R308
Q307
Q305
Q306
Q304
R306
R310
J19
J20
J24
CN301
94V-0
CMKM-P3X


POWER BLOCK
(SRV879EK)
POWER SUPPLY
-REF. NO. : 4000 SERIES-
MAIN BOARD
NO MARK : REC/PB MODE
SUB BOARD
T151 POWER TRANSFORMER
IC151 AN8028
IC151
SWITCHING REG.
Q151 2SK3047 SWITCHING REG.
PC151 ON3171 (1/2)
PC151 ON3171 (2/2)
IC251
SHUNT REG.
IC251 AN1431T
IC201
IC201 PQ12RD08
+12V REG.
Q301, 302, 307 MTR 24V SWITCH
Q303-306 MTR 18V SWITCH
Q201, 204 MTR 12V SIWTCH
Q205, 206 SW 5V REG.
Q207, 210 -30V SW
Q208, 209 SWITCT
Q211 UN4211 INV.
D101-104 1N4005
CN101 AC INLET
220-240V 50/60Hz
F101 T2AL 250V
Z101 750V
R101 1MΩ 1/2W
GND
CN201
1 GND
2 SW 5V
3 SW 5V
4 38V
5 MTR 12V
6 MTR 12V
7 CAPSTAN VCC
8 CAPSTAN VCC
9 18V CONT
10 24V CONT
11 13V
TO MA-359 BOARD (7/7) CN601
(SEE PAGE 4-17)
W202
1 GND
2 GND
3 POWER CONT 1
4 SW 12V
5 POWER CONT 2
6 D 6V
7 GND
8 +F(4.6V)
9 POWER SAVE CONT
10 -30V
11 -F(0V)
TO MA-359 BOARD (7/7) CN602
(SEE PAGE 4-17)
PS201 491.01.6
PS202 491002
PS251 491.750
16

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

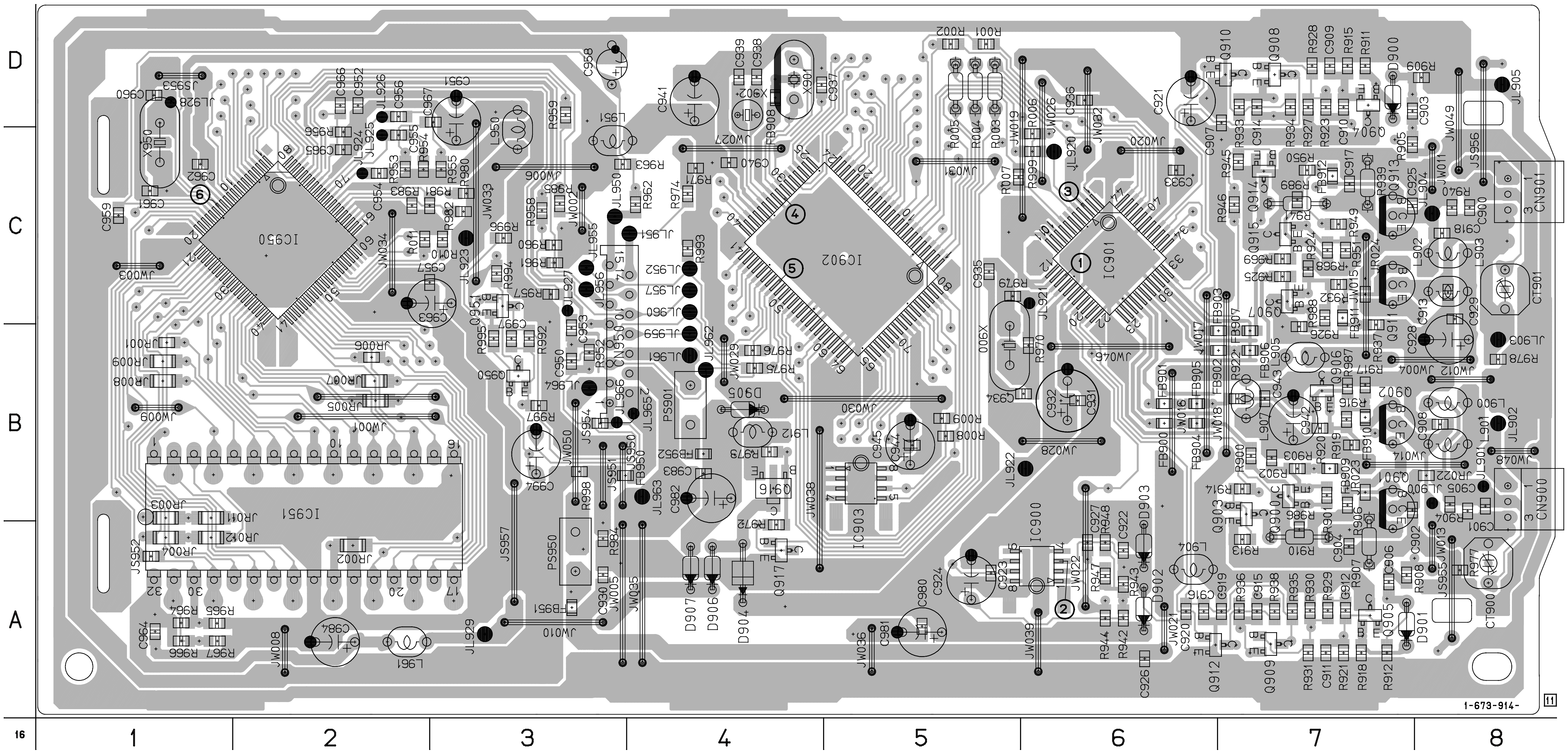
ML-17 (SMART FILE), AT-25 (INNER SMART FILE SENSOR), AT-26 (FRONT SMART FILE SENSOR) PRINTED WIRING BOARDS

— Ref. No. ML-17, AT-25 and AT-26 Boards; 2,000 Series —

ML-17 BOARD

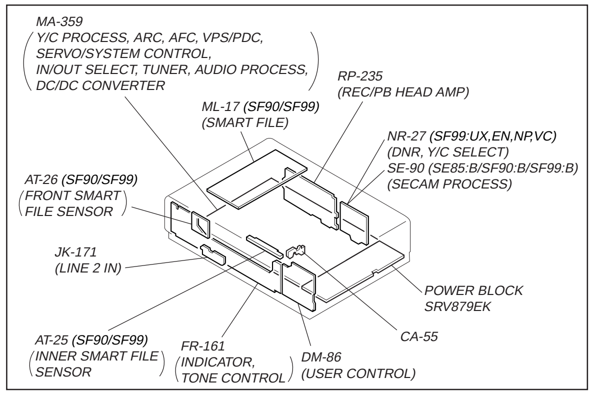
CN900	B-8
CN901	C-8
CN950	B-3
D900	D-7
D902	A-6
D903	A-6
D904	A-4
D905	B-4
D906	A-4
D907	A-4
IC900	A-6
IC901	C-6
IC902	C-5
IC903	B-5
IC950	C-2
IC951	B-2
Q900	B-7
Q901	B-7
Q902	B-7
Q903	B-7
Q904	D-7
Q905	A-7
Q906	B-7
Q907	C-7
Q908	D-7
Q909	A-7
Q910	D-7
Q911	C-7
Q912	A-6
Q913	C-7
Q914	C-7
Q915	C-7
Q916	B-4
Q917	A-4
Q950	B-3
Q951	C-3

ML-17 BOARD(SIDE B)

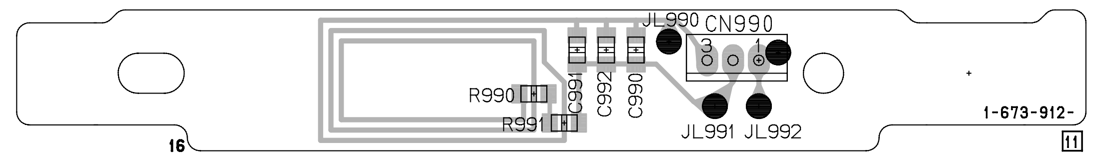

D
C
B
A
1
2
3
4
5
6
7
8
16
IC950
IC902
IC901
IC951
IC900
IC903
CN900
CN901
X950
X900
X901
CT900
CT901
PS901
PS950
1-673-914-
11

For printed wiring boards

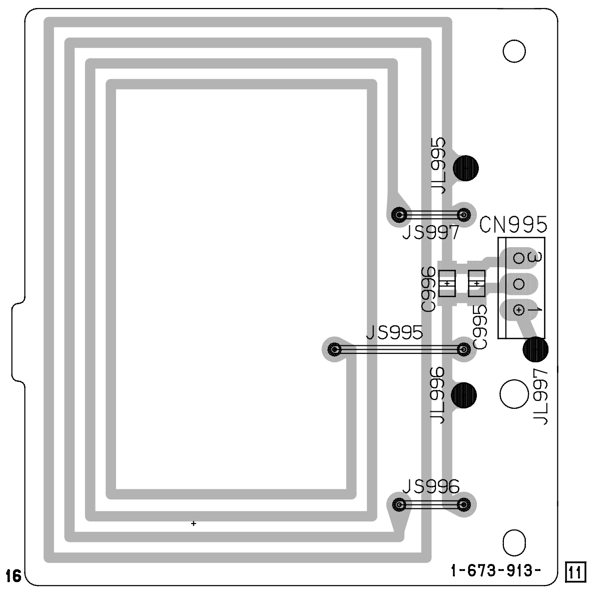
There are few cases that the part printed on this diagram isn't mounted in this model.


MA-359
Y/C PROCESS, ARC, AFC, VPS/PDC, SERVO/SYSTEM CONTROL, IN/OUT SELECT, TUNER, AUDIO PROCESS, DC/DC CONVERTER
RP-235
(REC/PB HEAD AMP)
ML-17 (SF90/SF99)
(SMART FILE)
NR-27 (SF99:UX,EN,NP,VC)
(DNR, Y/C SELECT)
SE-90 (SE85:B/SF90:B/SF99:B)
(SECAM PROCESS)
AT-26 (SF90/SF99)
(FRONT SMART FILE SENSOR
JK-171
(LINE 2 IN)
POWER BLOCK
SRV879EK
CA-55
AT-25 (SF90/SF99)
(INNER SMART FILE SENSOR
FR-161
(INDICATOR, TONE CONTROL
DM-86
(USER CONTROL)

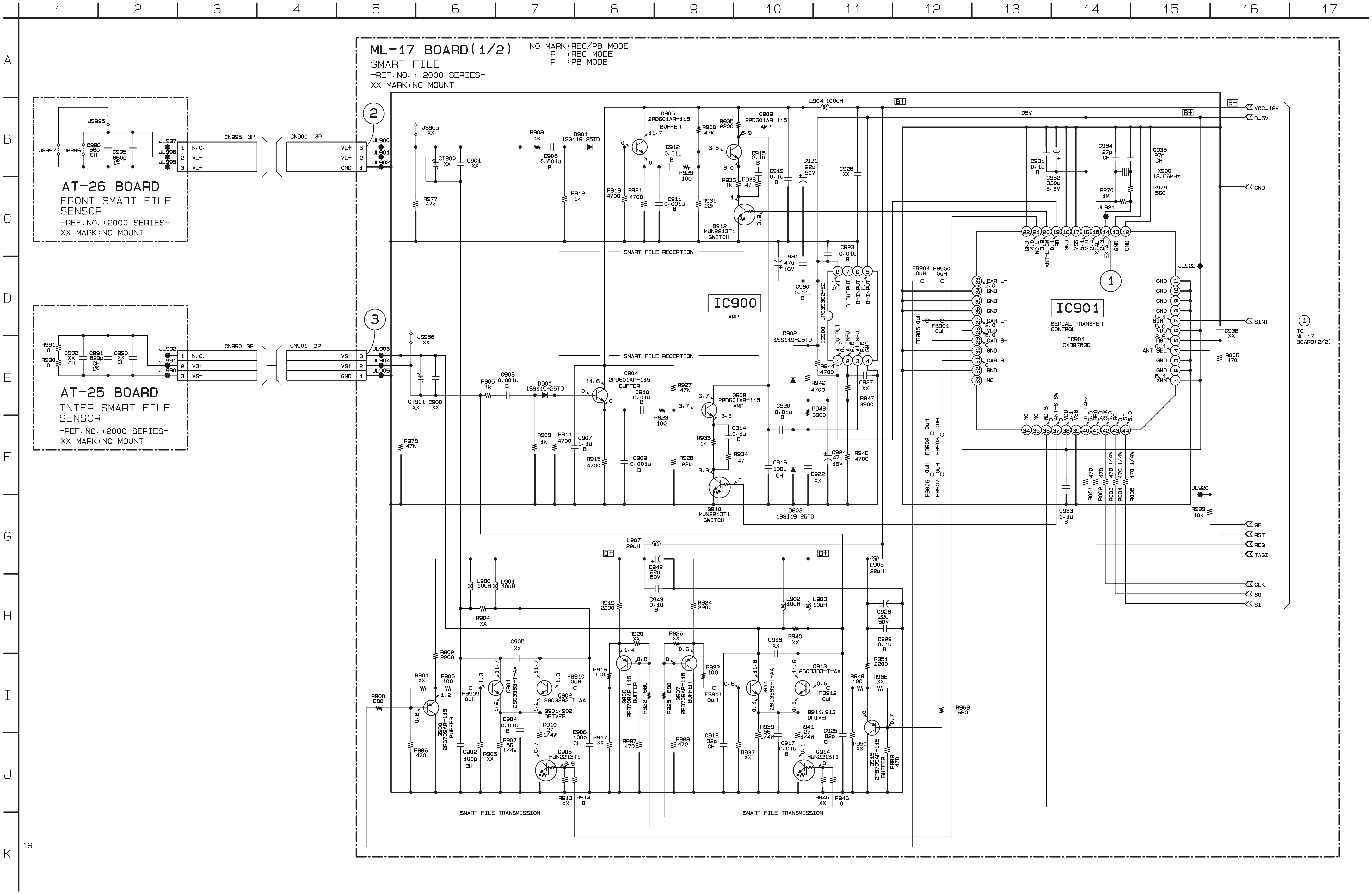
AT-25 BOARD(SIDE B)


JL990
CN990
R990
R991
C991
C992
C990
JL991
JL992
1-673-912-
16
11

AT-26 BOARD

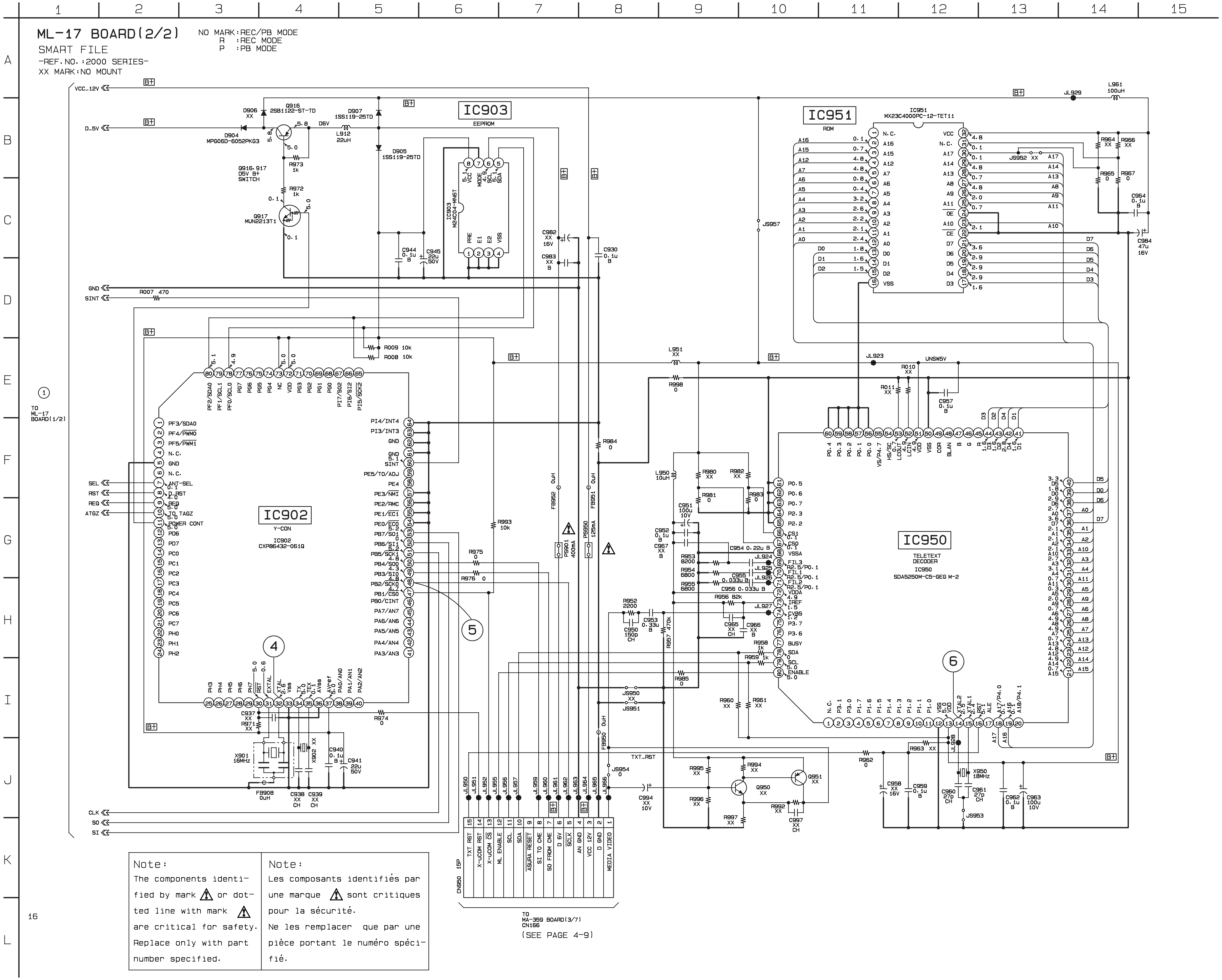

JL995
JS997
CN995
C996
C995
JS995
JL996
JL997
JS996
16
1-673-913-
11

For schematic diagram
- Refer to page 4-55 for waveforms.


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
A
B
C
D
E
F
G
H
I
J
K
ML-17 BOARD(1/2)
SMART FILE
-REF.NO.: 2000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
AT-26 BOARD
FRONT SMART FILE SENSOR
-REF.NO.:2000 SERIES-
XX MARK:NO MOUNT
AT-25 BOARD
INTER SMART FILE SENSOR
-REF.NO.:2000 SERIES-
XX MARK:NO MOUNT
CN995 3P
CN900 3P
CN990 3P
CN901 3P
N.C.
VL-
VL+
VS+
VS-
GND
JL900
JL901
JL902
JL903
JL904
JL905
JS955
JS956
JS995
JS996
JS997
Q905 2PD601AR-115 BUFFER
Q909 2PD601AR-115 AMP
Q912 MUN2213T1 SWITCH
Q904 2PD601AR-115 BUFFER
Q908 2PD601AR-115 AMP
Q910 MUN2213T1 SWITCH
D901 1SS119-25TD
D900 1SS119-25TD
D902 1SS119-25TD
D903 1SS119-25TD
L904 100uH
L907 22uH
L905 22uH
SMART FILE RECEPTION
SMART FILE TRANSMISSION
IC900 AMP
UPC3936S-E2
IC901
SERIAL TRANSFER CONTROL
IC901 CXD8753Q
X900 13.56MHz
D5V
B+
VCC_12V
D_5V
GND
SINT
SEL
RST
REQ
TAGZ
CLK
SO
SI
TO ML-17 BOARD(2/2)
CAR L+
CAR L-
CAR S-
CAR S+
ANT-SEL
XRM
NC
Q900 2PB709AR-115 BUFFER
Q901 2SC3383-T-AA
Q902 2SC3383-T-AA
Q901,902 DRIVER
Q903 MUN2213T1
Q906 2PB709AR-115 BUFFER
Q907 2PB709AR-115 BUFFER
Q911 2SC3383-T-AA
Q913 2SC3383-T-AA
Q911,913 DRIVER
Q914 MUN2213T1
Q915 2PB709AR-115 BUFFER
16

For schematic diagram

- Refer to page 4-49 for printed wiring board.


ML-17 BOARD(2/2)
SMART FILE
-REF.NO.:2000 SERIES-
XX MARK:NO MOUNT
NO MARK:REC/PB MODE
R :REC MODE
P :PB MODE
IC903
EEPROM
IC903 M24C04-WN6T
IC951
ROM
IC951 MX23C4000PC-12-TET11
IC902
Y-CON
IC902 CXP86432-061Q
IC950
TELETEXT DECODER
IC950 SDA5250M-C5-GEG M-2
Q916 2SB1122-ST-TD
Q917 MUN2213T1
Q916,917 D5V B+ SWITCH
D904 MPG06D-6052PKG3
D905 1SS119-25TD
D907 1SS119-25TD
X901 16MHz
X950 18MHz
Q950
Q951
TO ML-17 BOARD(1/2)
VCC_12V
D_5V
GND
SINT
SEL
RST
REG
ATGZ
CLK
SO
SI
CN950 15P
TXT RST
X-uCOM RST
X-uCOM CS
ML ENABLE
SCL
SDA
ASURA RESET
SI TO CME
SO FROM CME
D 6V
SCLK
AN GND
VCC 12V
D GND
MEDIA VIDEO
TO MA-359 BOARD(3/7) CN166
(SEE PAGE 4-9)
16

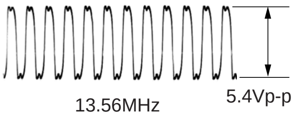
Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

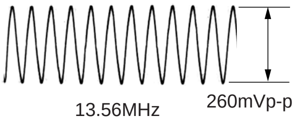
ML-17 BOARD (1/2)

REC/PB

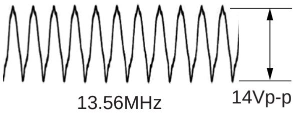
① IC901 ⑭



② CN900 ③

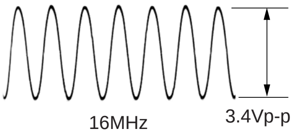


③ CN901 ③

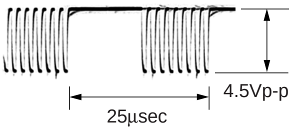


(2/2) REC/PB

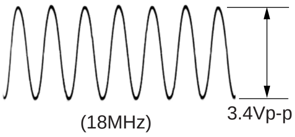
④ IC902 ㉜



⑤ IC902 ㊽



⑥ IC950 ⑭



SECTION 5
INTERFACE, IC PIN FUNCTION DESCRIPTION

5-1. SYSTEM CONTROL — VIDEO BLOCK INTERFACE (MA-359 BOARD IC160)

Signal	Pin No.	I/O	STOP FF/REW	TAPE THREADING	TAPE UNTHREADING	PB	PB PAUSE	SLOW	x 2	CUE	REVIEW	REC	REC PAUSE
RF SWP	①	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
QVD	④	O	L	L	L	*2	*3	*3	*2	*3	*3	L	L
V SYNC	(82)	I	*4	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
HA SWP	(92)	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1

*1 Synchronized with drum rotation. 30Hz 50% duty cycle.
*2 Normally “L“. “H“ when CTL signal is not generated.
*3 V period “H“ pulse.
*4 Selected by REC mode. “H“ in LP mode.“
*5 Composite sync signal (positive).

5-2. SYSTEM CONTROL — SERVO PERIPHERAL CIRCUIT INTERFACE (MA-359 BOARD IC160)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREADING	TAPE UNTHREADING	PB	PB PAUSE	SLOW	CUE	x 2	REVIEW	REC	REC PAUSE
$\overline{\text{CAP STOP}}$	㉝	O (O.D)	L	Hi-Z (O.D)	Hi-Z (O.D)	Hi-Z (O.D)	Hi-Z (O.D)	Hi-Z (O.D)	L	*3	Hi-Z (O.D)	Hi-Z (O.D)	Hi-Z (O.D)	Hi-Z (O.D)	Hi-Z (O.D)
STEP PLS	(99)	O	L	L	L	L	L	L	L	*2	L	L	L	L	L
DRM PG	㊺	I	*4	*1	*1	*5	*5	*1	*1	*1	*1	*1	*1	*1	*1
DRM FG	㊻	I	*4	*7	*7	*5	*5	*7	*7	*7	*7	*7	*7	*7	*7
CAP FG	㊼	I	H/L	*6	*6	*5	*5	*6	H/L	*2	*6	*6	*6	*6	H/L
CAP DA	(78)	O	*8	*8	*8	*8	*8	*9	*8	*8	*9	*8	*9	*9	*8
DRM DA	(79)	O	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10

*1. 30Hz pulse (NTSC), 25Hz pulse (PAL).
*2. Pulse at tape running.
*3. Reverse logic pulse of STEP PLS.
*4. “L” when drum rotation stops.
*5. Unstable period pulse.
*6. Pulse in period in proportional to tape speed.
*7. 360Hz pulse (NTSC), 300Hz pulse (PAL).
*8. Pulse at tape running.
*9. Approx. 2 msec period “H” or “L” pulse.
*10. Approx. 1.5 msec period “H” or “L” pulse.

5-3. SYSTEM CONTROL — MECHANISM INTERFACE (MA-359 BOARD IC160)

Signal	Pin No.	I/O	EJECTED	CASSETTE LOADING	CASSETTE UNLOADING	TAPE THREADING	TAPE UNTHREADING	STOP	FF	REW	PB	PB PAUSE	SLOW	x 2	CUE	REVIEW	REC	REC PAUSE
CAM2	⑨	HI-Z	L	H	L	H	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
MODE 1 (*8)	㉑	I	H	L	L	*1	*1	H	H	H	H	H	H	H	H	L	H	H
MODE 2 (*8)	⑳	I	H	L	L	*1	*1	H	H	H	L	L	L	L	L	L	L	L
MODE 3 (*8)	⑲	I	L	L	L	*1	*1	H	L	L	L	L	L	L	L	H	L	L
MODE 4 (*8)	⑱	I	L	H	H	*1	*1	L	H	H	H	L	L	L	L	L	L	L
CIN (REC PRF)	⑮	I	H	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
T REEL FG	(77)	I	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
S REEL FG	(76)	I	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
T/E LED	㉜	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
$\overline{\text{CAP STOP}}$	㉝	O (O.D)	L	L	L	H	H	L	H	H	H	L	*5	H	H	H	H	L
$\overline{\text{CAP RVS}}$	㉚	O	H			L	H	H/L	L	H	L	L	L/*5	L	L	H	L	L
T SENS	(61)	I	*4	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
S SENS	(62)	I	*4	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6

*1. Uncertainly.
*2. “L” when erasing protection tab is bent. “H” when not bent.
*3. Pause of period in proportion to reel rotating speed.
*4. Approx. 2 msec period “H” pulse.
*5. Pulse at tape running.
*6. Normally “L”. 2 msec period “H” pulse when tape top or tape end is detected.
*7. When transition to UNLOADING direction : “L”.
When transition to LOADING direction : “H”.
When CAM MOTOR is stopped : Hi-Z.
*8. When RVS slow : Mode 1=”L”
When RVS slow : Mode 2=”L”
When RVS slow : Mode 3=”H”
When RVS slow : Mode 4=”L”

5-4. SYSTEM CONTROL — SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA-359 BOARD IC160)

Signal	Pin No.	I/O	I/O Level
$\overline{\text{ASURA RESET}}$	㊵	I	Normally “H”, “L” when service interruption is detected or restored.
$\overline{\text{ASURA CS}}$	㉖	I	Chip select signal from timer microprocessor. V period “L” pulse.
S IN 0	㉓	I	Serial communication data from timer microprocessor. V period “ L” pulse.
S OUT 0	㉔	O	Serial communication data to timer microprocessor. V period “L” pulse.
$\overline{\text{S CLK}}$	㉕	I	Serial communication clock with timer microprocessor. V period “L” pulse.

5-5. SYSTEM CONTROL — AUDIO BLOCK INTERFACE (MA-359 BOARD IC160)

Signal	Pin No.	I/O	STOP/FF/REW	TAPE LOADING	TAPE UNLOADING	PB	PB PAUSE	SLOW	x 2	CUE	REVIEW	REC	REC PAUSE
AF ENV	(59)	I	AF RF envelope signal input terminal for automatic tracking.										
A MUTE	㉛	O (O.D)	L	L	L	*1	H	H	H	H	H	L	L
AF REC $\overline{\text{P}}$	②	O	L	L	L	L	L	L	L	L	L	H	L
AF SWP	(100)	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
$\overline{\text{FULL ERS}}$	㉞	O (O.D)	H	H	H	H	H	H	H	H	H	L	H

*1. 30 Hz 50 % duty pulse approx. 5 msec delayed from RF SW P.

5-6. SERVO/SYSTEM CONTROL MICROPROCESSOR PIN FUNCTIONS (MA-359 BOARD IC160)

Pin No.	Pin Name	I/O	Function
1	RF SWP	O	RF switching pulse output.
2	AF REC $\overline{\text{P}}$	O	“H” when HiFi audio REC.
3	N.C	O	Not used.
4	QVD	O	Quasi VD pulse output.
5	AUTO PRESET	O	“H” during auto preset.
6	FE ON	O	Flying erase ON/OFF.
7	SW1	O	BG/L control signal
8	N.C		Not used.
9	CAM 2	I	Cam motor control.
10	N.C		Not used.
11	TA MUTE	O	Tuner audio mute. H: Mute
12	SECAM DET	I	Not used.
13	N.C	I	Not used.
14	SECAM MIX		Not used.
15	CIN (REC PRF)	I	Erasing protection tab, cassette in detection signal input.
16	AV CONT	O	Not used.
17	$\overline{\text{SECAM ON}}$		
18	MODE 4	I	Cam encoder signal input.
19	MODE 3	I	Cam encoder signal input.
20	MODE 2	I	Cam encoder signal input.
21	MODE 1	I	Cam encoder signal input.
22	ENV SW	I	Video envelope mode detect signal (SP or EP)
23	S IN 0	I	Serial communication signal.
24	S OUT 0	O	Serial communication signal.
25	$\overline{\text{S CLK}}$	I	Serial communication signal.
26	$\overline{\text{ASURA CS}}$	I	Servo/system control microcomputer chip select signal.
27	SRVO	O	Not used.
28	CAP TRQ PWM	O	PWM output for capstan torque control.
29	C + DET		Not used.
30	$\overline{\text{CAP RVS}}$	O	Capstan reverse control “L” when reverse.
31	A MUTE	O	“H” when audio mute.
32	T/E LED	O	Tape top /end sensors driver.
33	$\overline{\text{CAP STOP}}$	O	Capstan stop signal output.
34	$\overline{\text{FULL ERS}}$	O	Full erase control.
35	N.C		Not used.
36	SDA 0	I/O	Serial communication data.
37	N.C		Not used.
38	SCL 0	I/O	Serial communication clock.
39	MP	—	Ground.
40	$\overline{\text{ASURA RESET}}$	I	System reset signal.
41	V SS	—	Ground.
42	XTAL	O	System clock (16 MHz).
43	EXTAL	I	System clock (16 MHz).
44	N.C	—	Not used.
45	DRM PG	I	Drum PG input.
46	DRM FG	I	Drum FG input.
47	CAP FG	I	Capstan FG input.
48	$\overline{\text{DNR RST}}$	—	NICOL control signal out.
49	FRONT SEL	—	Cable box control signal out.
50	I CONT	—	Forced mono.
51	SW2	O	Not used.
52	AVSS	—	Ground.
53	AVref	I	D5V
54	AVDD	I	D5V
55	NTPB SW	I	Ground.
56	AV ADJ	I	Adjustment mode.
57	$\overline{\text{FOLLW TV}}$	—	Ground.
58	N.C	—	Ground.
59	AF ENV	I	HiFi audio playback signal envelope.
60	RF ENV	I	Video playback signal envelope.
61	T SENS	I	Take-up end sensor.
62	S SENS	I	Supply end sensor.
63	N.C	I	Not used.
64	AMP VSS	—	Ground.
65	CTL HEAD (–)	I/O	CTL signal I/O.
66	CTL HEAD (+)	I/O	CTL signal I/O.
67	HEADL (+)	O	CTL signal.
68	HEADL (–)	O	CTL signal.
69	CTL F AMP (+)	I	CTL first AMP input.
70	CTL F AMP (–)	I	CTL first AMP input.
71	CTL GND	O	Ground.
72	CTL S AMPI	I	CTL second AMP input.
73	CTL F AMPO	O	CTL first AMP output.
74	AMP VDD	I	5 V.
75	CTL OUT	O	Control signal output for check pin.
76	S REEL FG	I	Supply reel FG input.
77	T REEL FG	I	Take-up reel FG input.
78	CAP DA	O	Capstan error D/A output.
79	DRM DA	O	Drum error D/A output.
80	N.C		UNSW 5 V.
81	N.C	—	Ground.
82	VSYNC	I	Composite sync signal input.
83	N.C		Not used.
84	24 V_CONT	O	24 V control, when the high speed mode.
85	18 V_CONT	O	18 V control, when the high speed mode.
86	N.C		Not used.
87	N.C		Not used.
88	VSS	—	Ground.
89	VDD	I	D5V
90	5V	I	D5V
91	N.C	O	Not used.
92	FAST SEARCH	O	Switching signal for capacitor on CTL(X).
93	HA SWP	O	Head AMP SWP.
94	POWER SAVE CONT 1	O	Not used.
95	POWER SAVE C+	O	Not used.
96	MOD CONT	O	Tuner modulation out control signal.
97	$\overline{\text{SP}}$/LP	O	Tape speed mode control signal “L” when SP mode.
98	TV/VTR	O	Not used.
99	STEP PLS	O	Step pulse “H” when capstan step driving.
100	AF SWP	O	AF switching pulse output.

5-7. TUNER/TIMER MODE CONTROL PIN FUNCTION (FR-161 BOARD IC180)

Pin No.	Pin Name	I/O	Function
1	TXT RST	O	Teletext IC (ML Board IC950) Reset signal
2	NC	—	
3	LANC IN (SENSER)	I	Lanc Input
4	LANC OUT (SENSER)	O	Lanc Output
5	NC	—	
6	SIRCS IN	I	Remote control Input.
7	EEP DATA	I/O	I2C bus interface Data Input/Output
8	EEP SCL	I/O	I2C bus interface Clock Input/Output
9	SDA	I/O	I2C bus interface Data Input/Output
10	SCL	I/O	I2C bus interface Clock Input/Output
11	FDP CS	O	FLD Driver Chip Select
12	NC	—	
13	X-UCOM CS	O	ML IC Chip Select (ML Board IC902)
14	NC	—	
15	VSS	—	GND
16	TU ENABLE	O	Tuner Chip Select
17	PLL CLK	O	Tuner PLL Clock
18	PLL DATA	O	Tuner PLL Data
19	OSD CS	O	OSD IC (MA359 IC660) Chip Select
20	NC	—	
21	ASURA RESET	O	S/S micom (MA359 board IC160) reset signal
22	ASURA CS	O	S/S micom (MA359 board IC160) Chip Select signal
23	POWER CONT1	O	Main Power supply control signal
24	POWER CONT2	O	Secondary Power supply control signal
25	NC	—	Together with 28, 30 & 31
26	ML ENABLE	O	ML board IC950 Enable signal
27	OPTION2	I	ML board IC950 Busy signal
28	NC	—	Together with 25, 30 & 31
29	OPTION3	—	Not used ?
30	NC	—	Together with 28 & 25
31	NC	—	
32	Not used	—	Positive supply Voltage
33	Not used	—	
34	Not used	—	
35	SI (TO CME)	I	Serial Data Input
36	SO (FROM CME)	O	Serial Data Output
37	SCLK	I/O	Serial Clock Input/Output
38	NC	—	
39	NC	—	
40	RST	I	System Reset
41	VSS	—	GND
42	XTAL	O	Internal Oscillator output for 20 MHz crystal
43	EXTAL	I	Internal Oscillator 20 MHz crystal input
44	VDD	—	Positive supply Voltage
45	NC	—	Together with 49 ~ 52
46	NC	—	
47	OSD SO (FROM CME)	O	Serial Data Output
48	OSD SCLK	O	Serial Clock Input/Output

Pin No.	Pin Name	I/O	Function
49	NC	—	Together with 45 & 46
50	NC	—	
51	NC	—	
52	NC	—	
53	VDD	—	Positive supply Voltage
54	TEX	I	Internal Oscillator 32 kHz crystal input
55	TX	O	Internal Oscillator output for 32 kHz crystal
56	VSS	—	GND
57	AV LINK OUT	O	AV LINK output
58	SIRCS OUT	O	Remote control output
59	NC	—	Together
60	NC	—	
61	NC	—	
62	BUZZER	O	Buzzer Output/Clock Crystal frequency division output
63	POWER FAIL	I	Power Voltage drop Detection pin
64	Not used	—	Positive supply Voltage
65	Not used	—	Positive supply Voltage
66	CGV	I	Vertical Synchro detection
67	PDC DAV	I	VPS/PDC Acknowledge signal
68	Not used	—	Positive supply Voltage
69	AV LINK IN	I	AV LINK input
70	Not used	—	Positive supply Voltage
71	Not used	—	Positive supply Voltage
72	A/D0	I	Key Pad Reading
73	A/D1	I	Key Pad Reading
74	A/D2	I	Key Pad Reading
75	A/D3	I	Key Pad Reading
76	A VSS	—	GND
77	A VREF0	—	Positive supply Voltage
78	A VREF1	—	Positive supply Voltage
79	A VDD	—	Positive supply Voltage
80	A/D4	I	Key Pad Reading
81	A/D5	I	Key Pad Reading
82	A/D6	—	Together
83	Not used	—	
84	DMS1	I	
85	DMS2	I	
86	AFT	I	Ground Wave tuner AFT detection
87	HDET	I	HDET signal input
88	VDD	—	Positive supply Voltage
89	VDD	—	Positive supply Voltage
90	VSS	—	GND
91	NC	—	Together
92	NC	—	
93	NC	—	
94	NC	—	
95	NC	—	
96	NC	—	
97	NC	—	
98	NC	—	
99	EEP MODE	O	EEP Mode control
100	X-UCOM RST	O	X-UCOM reset signal (IC902 ML Board)

SECTION 6
ADJUSTMENTS

6-1. MECHANICAL ADJUSTMENT

For the mechanical adjustments, please refer to the “VHS MECANICAL ADJUSTMENT MANUAL Ⅵ (S MECHANISM)” (9-921-647-13)

6-2. ELECTRICAL ADJUSTMENT

2-1. PREPARATION BEFORE ADJUSTMENT

2-1-1. Equipment Required

The measuring instruments used for this alignment include:

1) Monitor TV
2) Oscilloscope, dual-trace, bandwidth above 30 MHz with delay mode (Unless specified otherwise, use a 10 : 1 probe.)
3) Frequency counter
4) PAL pattern generator
5) Remote commander
6) Digital voltmeter
7) Audio generator
8) Audio level meter
9) Audio attenuator
10) Alignment tape
    KRV-51NP (PAL) Part No.: 8-192-955-57

2-1-2. Equipment Connection

Unless specified otherwise, connect the measuring instrument as shown in the following diagram.

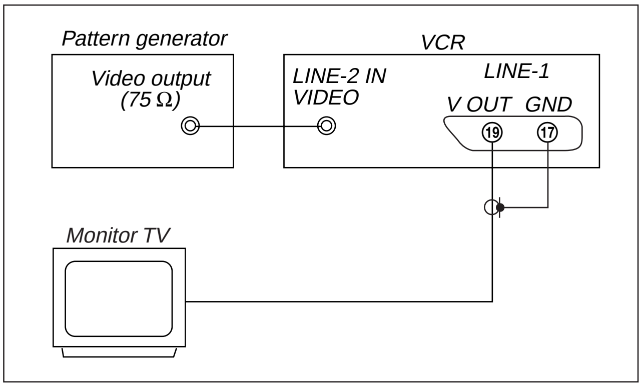

Pattern generator
Video output
(75 Ω)
VCR
LINE-2 IN
VIDEO
LINE-1
V OUT GND
⑲
⑰
Monitor TV

Fig. 6-2-1.

2-1-3. Setup for adjustment

Because the video signal obtained from the pattern generator is used as the adjustment signal for adjustments, the video output signal must satisfy the given specification.
Connect the oscilloscope to VIDEO LINE-2 IN terminal, and check that the amplitude of sync signal is approximately 0.3V, the amplitude of the video section is approximately 0.7V and the amplitude of burst signal is approximately 0.3V. And check that the level ratio of the burst signal to “red” signal is 0.30 : 0.66.
The video signal used for adjustments is shown in Fig. 6-2-2.

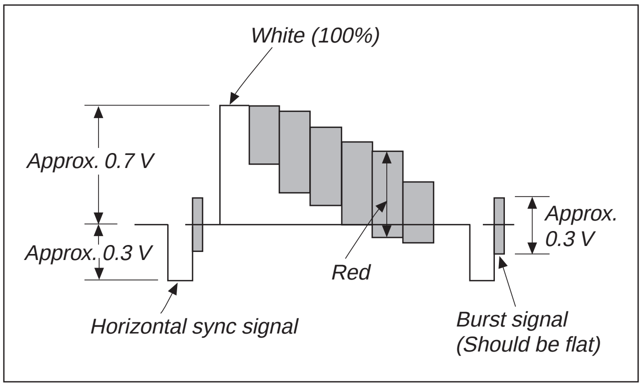

White (100%)
Approx. 0.7 V
Approx. 0.3 V
Red
Approx.
0.3 V
Horizontal sync signal
Burst signal
(Should be flat)

Fig. 6-2-2. Color Bar Signal of Pattern Generator

2-1-4. Alignment Tape

- Contents of KRV-51NP

	Mode	Period	Video signal	Audio signal	
				Hi-Fi	Normal
1	SP	7 minutes	Color bar	400Hz (L/R)	400Hz
2		3 minutes	Monoscope		
3	LP	7 minutes	Color bar		
4		3 minutes	Monoscope		

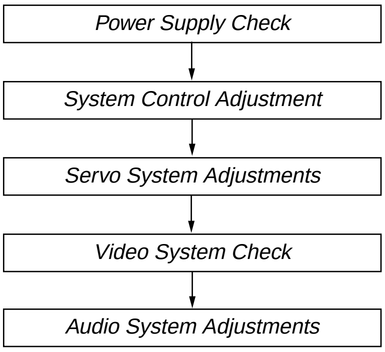
2-1-5. Input/Output Levels and impedance

Video input: LINE-1 / LINE-3 IN(*1) / LINE-4 IN(*2)
EURO AV connector
Input signal: 1Vp-p, 75 ohms, unbalanced, sync negative
LINE-2 IN / LINE-3 IN(*2), Phono jack
Input signal: 1Vp-p, 75 ohms, unbalanced, sync negative
Video output: LINE-1, EURO AV connector
Output signal: 1Vp-p, 75 ohms, unbalanced, sync negative
LINE-2 OUT(*2), Phono jack
Output signal: 1Vp-p, 75 ohms, unbalanced, sync negative
Audio input: LINE-1 / LINE-3 IN(*1) / LINE-4 IN(*2)
EURO AV connector
Input level: –6.3dBs
Input impedance: more than 47 kilohms
LINE-2 IN/ LINE-3 IN(*2), Phono jack
Input level: –7.5dBs
Input impedance: more than 47 kilohms
(0dBs=0.775Vrms)
Audio output: LINE-1, EURO AV connector
Output level: –6.3dBs at load impedance 47 kilohms
Output impedance: less than 10 kilohms
LINE-2 OUT(*2), Phono jack
Output level: –7.5dBs at load impedance 47 kilohms
Output impedance: less than 10 kilohms

*1 : SLV-SE85/SF90 model only
*2 : SLV-SF99 model only

2-1-6. Adjustment Sequence

The adjustments should be performed in the following sequence.



2-2. POWER SUPPLY CHECK

2-2-1. Power Supply Voltage Check (MA-359 board)

Mode	E-E
Measuring instrument	Digital voltmeter
38V check	
Measurement point	CN601 pin ④
Specified value	39 ± 3Vdc
13V check	
Measurement point	CN601 pin ⑪
Specified value	13.55 ± 0.45Vdc
MTR12V check	
Measurement point	CN601 pin ⑤ or ⑥
Specified value	$13.5\,^{+0.6}_{-0.4}$ Vdc
CAPSTAN VCC check	
Measurement point	CN601 pin ⑦ or ⑧
Specified value	13.5 ± 0.5Vdc
SW12V check	
Measurement point	CN602 pin ④
Specified value	12.0 ± 0.3Vdc
D6V check	
Measurement point	CN602 pin ⑥
Specified value	5.9 ± 0.15Vdc
SW5V check	
Measurement point	CN601 pin ② or ③
Specified value	5.15 ± 0.15 Vdc
–30V check	
Measurement point	CN602 pin ⑩
Specified value	–29 ± 3Vdc
+F, –F check	
Measurement point	+ probe: CN602 pin ⑧ – probe: CN602 pin ⑪
Specified value	4.6 ± 0.5Vdc

[Check Method]

1) Check that each power supply voltage satisfies the specified value.

2-3. SYSTEM CONTROL SYSTEM ADJUSTMENT

2-3-1. Clock Adjustment (FR-161 board)

[Adjustment Purpose]

To adjust the precision of the clock. If this specification is not satisfied, the clock will lose or will gain time.

Mode	E-E
Signal	Arbitrary
Measurement Point	IC180 Pin (62) (BUZZER)
Measuring Instrument	Frequency counter
Adjusting element	CT180
Specified Value	f = 8.192000 to 8.1920325kHz

[Adjusting method]

1) Connect JL237 (Connecting point of R416 (2.2kΩ) and R412 (2.2kΩ)) and GND with a jumper wire.
2) Adjust the BUZZER frequency (f) to the specified value with CT180.
3) Remove the jumper wire.

2-4. SERVO SYSTEM ADJUSTMENT

2-4-1. RF Switching Position Adjustment (MA-359 board)

[Adjustment Purpose]

To adjust the link of the A-ch and B-ch of the tape playback outputs. To make the unit compatible with other tapes and units. If this specification is not satisfied, the link will appear on the screen and the screen will be disrupted, etc.

Mode	Playback
Signal	Alignment tape: SP mode color bar portion

[Adjustment method]

1) Connect RP-235 board CN261 pin ⑤ (AV ADJ) and GND with a jumper wire.
2) Check that “AP” indicator on the display window turns on.
3) Remove the jumper wire.
4) Press EJECT button. (RF switching position adjustment is performed automatically.)
5) Perform “Hi-Fi Switching Position Adjustment”.

2-4-2. Hi-Fi Switching Position Adjustment (MA-359 board)

[Adjustment Purpose]

To adjust the link of the A-ch and B-ch of the tape playback outputs. To make the unit compatible with other tapes and units. If this specification is not satisfied, the switching noise will be heard, etc.

Mode	Playback
Signal	Alignment tape: SP mode color bar portion
Measurement Point	CH1: RP-235 board CN341 pin ① (HF ADJ) CH2: RP-235 board CN261 pin ② (RF SWP)
Measuring Instrument	Oscilloscope
Specified Value	A = minimum

Note: Perform “RF Switching Position Adjustment” before this adjustment.

[Adjustment method]

1) Connect RP-235 board CN261 pin ⑤ (AV ADJ) and GND with a jumper wire.
2) Check that “AP” indicator on the display window turns on.
3) Remove the jumper wire.
4) Press REC button.
5) Check that “AH” indicator on the display window turns on.
6) Press PROGRAM+ and PROGRAM– buttons and minimize the part A of PB AF RF signal.
7) Press PAUSE button.
8) Check that the “AH” indicator turns off.

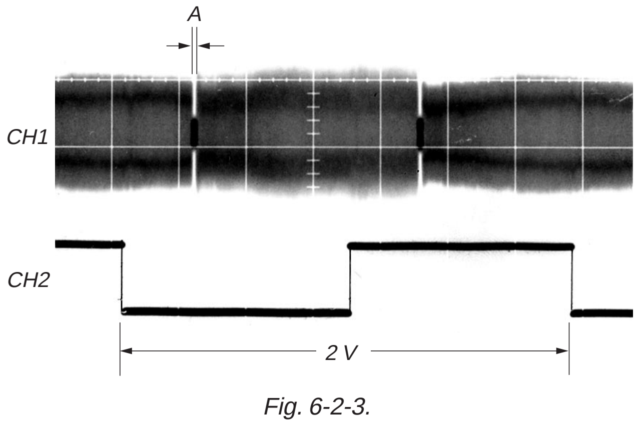


Fig. 6-2-3.

2-5. VIDEO SYSTEM CHECK

2-5-1. Playback Level Check (MA-359 board)

[Adjustment purpose]

Confirm that the playback video signal level is within the specification.

Mode	Playback
Signal	Alignment tape: SP mode color bar portion
Measurement Point	CN200 ⑪ pin (EEV PB) (Note1) JW234 (IC001 ⑱ pin : ARCVY) (Note2)
Measuring Instrument	Oscilloscope
Specified Value	A=2.00 ± 0.18V

Note 1: For SLV-SF99 model. (Except B model)
Note 2: For SLV-SE85/SF90 or B model.

[Check method]

1) Check that the video signal level (A) satisfies the specified value.

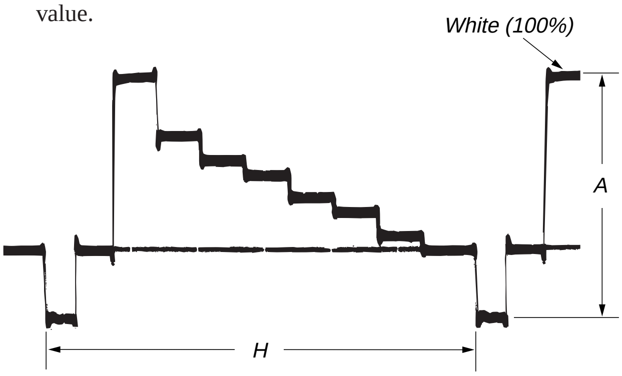


Fig. 6-2-4.

2-5-2. Sync AGC Check (MA-359 board)

[Adjustment purpose]

Confirm that the E-E video output level is within the specification.

Mode	E-E
Signal	Color bar
Measurement Point	CN200 ⑪ pin (EEV PB) (Note1) JW234 (IC001 ⑱ pin : ARCVY) (Note2)
Measuring Instrument	Oscilloscope
Specified Value	A=2.0 ± 0.1V

Note 1: For SLV-SF99 model. (Except B model)
Note 2: For SLV-SE85/SF90 or B model.

Switch setting:

INPUT SELECT L2

[Check method]

1) Input a color bar signal to VIDEO LINE 2 terminal.
2) Check that the video signal level (A) satisfies the specified value.

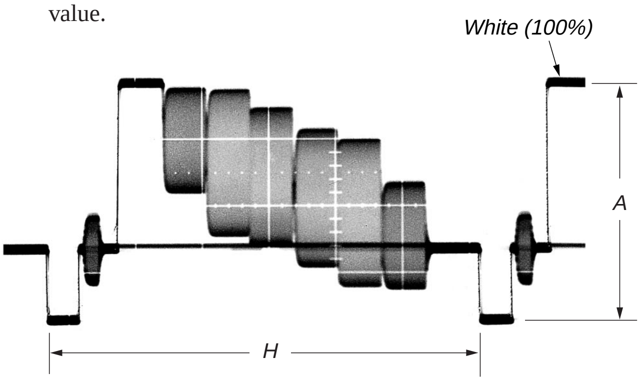


Fig. 6-2-7.

2-5-3. Deviation Check (MA-359 board)

[Adjustment purpose]

Confirm that the YFM signal deviation is within the specification.

Mode	Recording and playback (SP mode)
Signal	Color bar
Measurement Point	CN200 ⑪ pin (EEV PB) (Note1) JW234 (IC001 ⑱ pin : ARCVY) (Note2)
Measuring Instrument	Oscilloscope
Specified Value	A=2.00 ± 0.18V

Note 1: For SLV-SF99 model. (Except B model)
Note 2: For SLV-SE85/SF90 or B model.
Note 3: This check should be carried out upon completion of “Playback Level Check” and “Sync AGC Check”.

Switch setting:

INPUT SELECT L2

[Check method]

1) Record the color bar signal.
2) Playback the recorded section.
3) Check that the video signal level (A) satisfies the specified value.

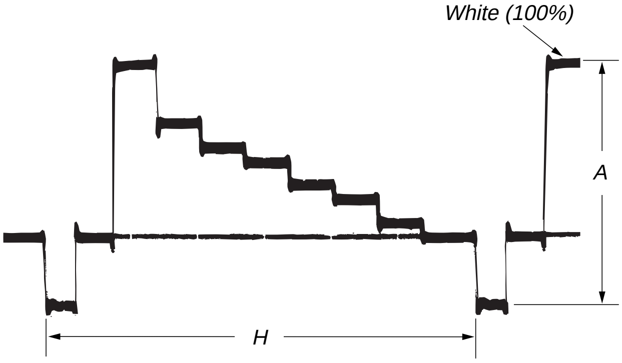


Fig. 6-2-6.

2-5-4. DNR Y Level Adjustment (NR-27 board) (SLV-SF99 model only. (Except B model))

[Adjustment purpose]

Adjust the Y level during DNR ON.

Mode	Playback
Signal	Alignment tape: SP mode color bar portion
Measurement Point	CN001 ⑨ pin (DNR Y)
Measuring Instrument	Oscilloscope
Adjusting element	RV002
Specified Value	A=2.0 ± 0.2V

Switch setting:

DNR .... ON

[Adjusting method]

1) Adjust the Y signal level (A) to the specified value with RV002.

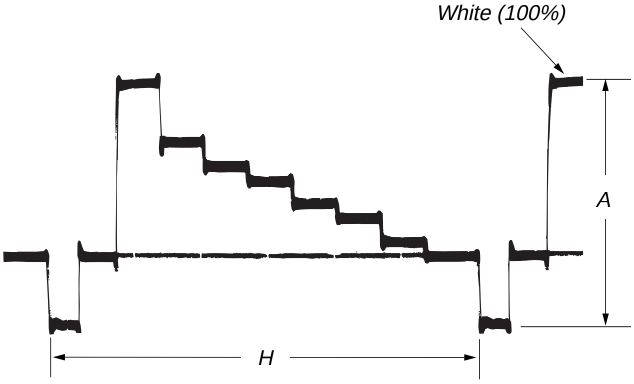


Fig. 6-2-7.

2-5-5. DNR C Level Adjustment (NR-27 board) (SLV-SF99 model only. (Except B model))

[Adjustment purpose]

Adjust the chroma level during DNR ON.

Mode	Playback
Signal	Alignment tape: SP mode color bar portion
Measurement Point	CN001 ⑤ pin (DNR C)
Measuring Instrument	Oscilloscope
Adjusting element	RV001
Specified Value	A=600 ± 70mV

Switch setting:

DNR .... ON

[Adjusting method]

1) Adjust the burst signal level (A) to the specified value with RV001.

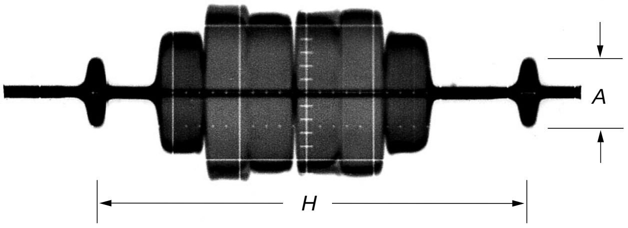


Fig. 6-2-8.

2-6. AUDIO SYSTEM ADJUSTMENT

[Connecting Instruments]

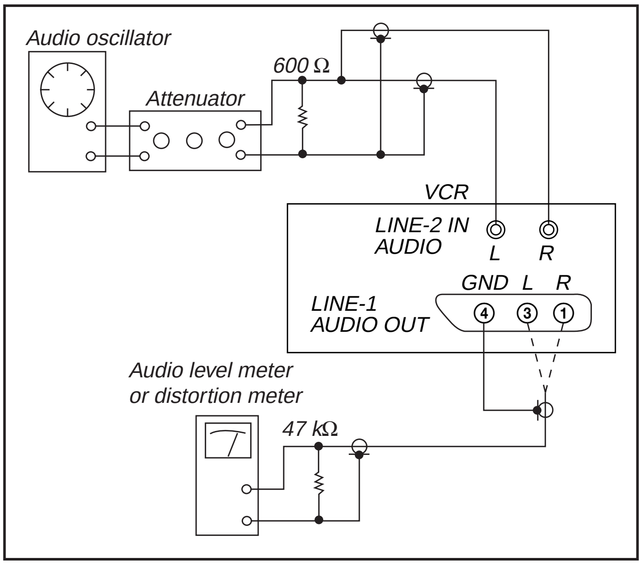


Fig. 6-2-9.

2-6-1. Hi-Fi Audio System Check

2-6-1-1. E-E Output Level Check

[Adjustment purpose]

Confirm that the E-E audio output level is within the specification.

Mode	E-E
Signal	400Hz, –7.5dB
Measurement Point	LINE1 A(L) OUT (CN500 ③ pin) or LINE1 A(R) OUT (CN500 ① pin)
Measuring Instrument	Audio level meter
Specified Value	–6.3 ± 2dBs

Switch setting:

INPUT SELECT L2

[Check method]

1) Input a 400Hz, –7.5dBs signal to both L and R channels of AUDIO LINE 2 terminal.
2) Check that the audio output signal satisfies the specified value.

2-6-1-2. Overall Level Characteristics Check

[Adjustment purpose]

Confirm that the level characteristic is within the specification.

Mode	Recording and playback (SP mode)
Signal	400Hz, –7.5dBs
Measurement Point	LINE1 A(L) OUT (CN500 ③ pin) or LINE1 A(R) OUT (CN500 ① pin)
Measuring Instrument	Audio level meter
Specified Value	–6.3 ± 2dBs

Switch setting:

INPUT SELECT L2

[Check method]

1) Input a 400Hz, –7.5dBs signal to both L and R channels of AUDIO LINE 2 terminal.
2) Record the signal in the SP mode.
3) Playback the recorded section.
4) Press the AUDIO MONITOR button of the remote commander and select the stereo audio mode (STEREO indicator on the display window turns on.).
5) Check that the 400Hz signal level satisfies the specified value.

2-6-2. Normal Audio System Adjustment

- Make adjustment in the SP mode unless otherwise specified.
- Use a normal VHS cassette tape for adjustment.

2-6-2-1. ACE Head Adjustment

Refer to the VHS mechanical adjustment manual Ⅵ (S MECHANISM) (9-921-647-11).

2-6-2-2. Frequency Response Check

[Adjustment purpose]

Confirm that the frequency characteristics are within the specification.

Mode	Recording and playback (SP mode)
Signal	①: 400Hz, –27.5dBs ②: 7kHz, –27.5dBs
Measurement Point	LINE1 A(L) OUT (CN500 ③ pin) or LINE1 A(R) OUT (CN500 ① pin)
Measuring Instrument	Audio level meter
Specified Value	0 ± 3dB

Note: Perform “E-E Output Level Check” of “Hi-Fi Audio System Check” before this adjustment.

Switch setting:

INPUT SELECT L2

[Check method]

1) Input a 400Hz, –27.5dBs signal to both L and R channels of AUDIO LINE 2 terminal.
2) Record the signal in the SP mode.
3) Input a 7kHz, –27.5dBs signal to both L and R channels of AUDIO LINE 2 terminal.
4) Record the signal in the SP mode.
5) Playback the recorded section.
6) Press the AUDIO MONITOR button of the remote commander and select the normal audio mode (STEREO indicator on the display window turns off.).
7) Check that the 7kHz signal level against to the 400Hz signal level satisfies the specified value.

SECTION 7
REPAIR PARTS LIST

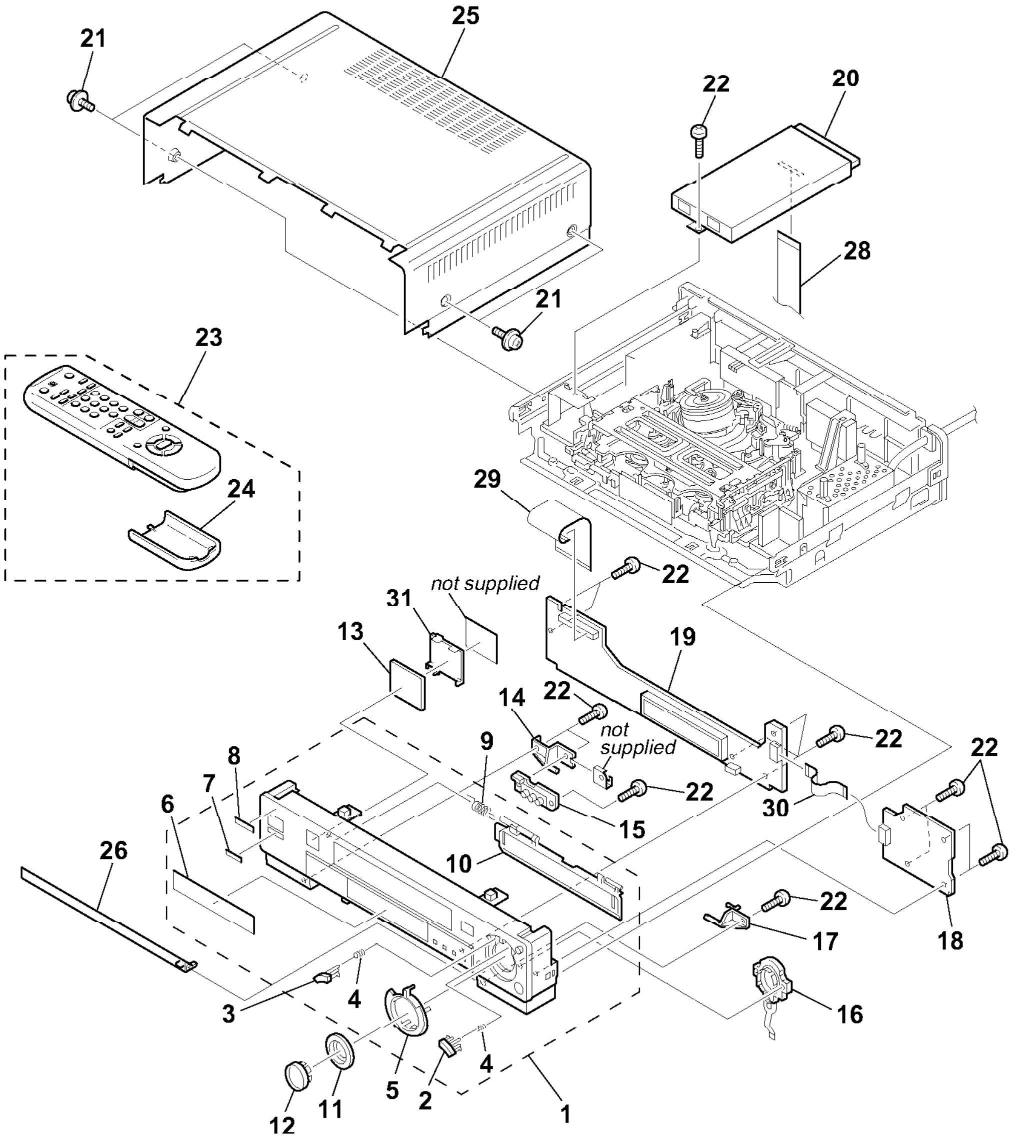
7-1. EXPLODED VIEWS

NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

7-1-1. FRONT PANEL AND UPPER CASE SECTION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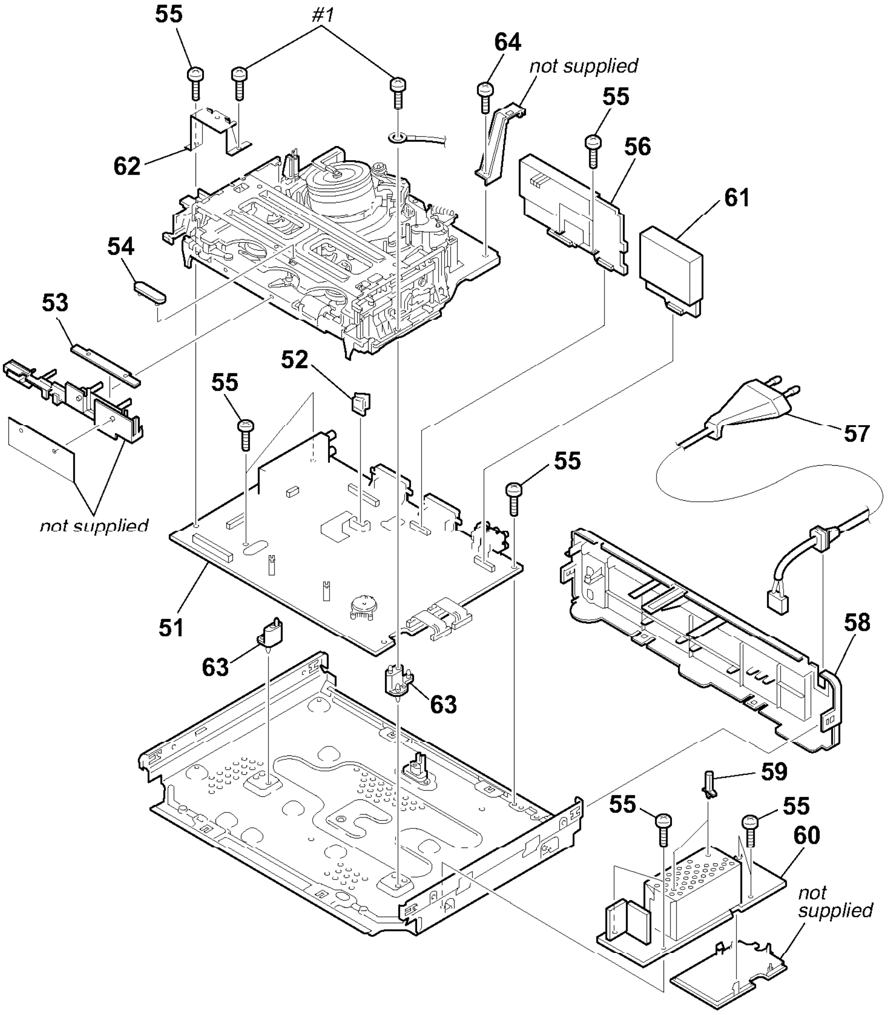
Ref. No.	Part No.	Description	Remarks
1	X-3949-563-1	PANEL ASSY, FRONT (SF90:UX(SF),EX)	
1	X-3949-564-1	PANEL ASSY, FRONT (SF90:VC(SF),NP(SF))	
1	X-3949-565-1	PANEL ASSY, FRONT (SF90:B(SF))	
1	X-3949-566-1	PANEL ASSY, FRONT (SE85:UX)	
1	X-3949-567-1	PANEL ASSY, FRONT (SE85:NP,VC)	
1	X-3949-568-1	PANEL ASSY, FRONT (SE85:B)	
1	X-3949-569-1	PANEL ASSY, FRONT (SF99:UX)	
1	X-3949-570-1	PANEL ASSY, FRONT (SF99:NP,VC)	
1	X-3949-571-1	PANEL ASSY, FRONT (SF99:B)	
1	X-3949-572-1	PANEL ASSY, FRONT (SF99:EN)	
1	X-3949-818-1	FRONT PANEL ASSY (SF90:UX(WF))	
1	X-3949-819-1	FRONT PANEL ASSY (SF90:VC(WF),NP(WF))	
1	X-3949-820-1	FRONT PANEL ASSY (SF90:B(WF))	
2	3-054-851-01	BUTTON, FF (SE85:UX,NP,VC)	
2	3-054-851-11	BUTTON, FF	(SF99:UX,EN,NP,VC/SF90:UX(SF),VC(SF),NP(SF),EX)
2	3-054-851-21	BUTTON, FF (SF99:B/SF90:B(SF))	
2	3-054-851-31	BUTTON, FF (SE85:B)	
2	3-054-851-41	BUTTON, FF (SF90:UX(WF),VC(WF),NP(WF))	
2	3-054-851-51	BUTTON, FF (SF90:B(WF))	
3	3-054-852-01	BUTTON, REW (SE85:UX,NP,VC)	
3	3-054-852-11	BUTTON, REW	(SF99:UX,EN,NP,VC/SF90:UX(SF),VC(SF),NP(SF),EX)
3	3-054-852-21	BUTTON, REW (SF99:B/SF90:B(SF))	
3	3-054-852-31	BUTTON, REW (SE85:B)	
3	3-054-852-41	BUTTON, REW (SF90:UX(WF),VC(WF),NP(WF))	
3	3-054-852-51	BUTTON, REW (SF90:B(WF))	
4	3-054-865-01	SPRING, COMPRESSION	
5	3-054-854-01	PLATE, RING ORNAMENTAL (SE85)	
5	3-054-854-11	PLATE, RING ORNAMENTAL (SF99/SF90)	
6	3-054-858-01	FILTER	(SF90:B(WF),VC(WF),NP(WF),UX(SF),B(SF),VC(SF),NP(SF),EX)
7	3-054-855-01	WINDOW, REMOTE CONTROL	(SF99:UX/SF90:UX(SF),B(SF),VC(SF),NP(SF),EX/SE85)
7	3-054-855-11	WINDOW, REMOTE CONTROL	(SF99:EN,NP,B,VC/SF90:UX(WF),B(WF),VC(WF),NP(WF))
8	3-943-995-01	EMBLEM (NO.5), SONY (SE85)	
8	3-943-995-31	EMBLEM (NO.5), SONY	(SF99/SF90:UX(SF),B(SF),VC(SF),NP(SF),EX)
8	3-943-995-41	EMBLEM (NO.5), SONY	(SF90:UX(WF),B(WF),VC(WF),NP(WF))
9	3-953-432-01	SPRING (GE), FL	
10	3-054-846-11	DOOR (DD), CASSETTE	(SF99:UX,EN,NP,VC/SF90:UX(SF),VC(SF),NP(SF),EX)
10	3-054-846-21	DOOR (DD), CASSETTE (SE85:UX,NP,VC)	
10	3-054-846-31	DOOR (DD), CASSETTE (SF99:B/SF90:B(SF))	
10	3-054-846-41	DOOR (DD), CASSETTE (SE85:B)	
10	3-054-846-51	DOOR (DD), CASSETTE	(SF90:UX(WF),VC(WF),NP(WF))
10	3-054-846-61	DOOR (DD), CASSETTE (SF90:B(WF))	
11	3-054-859-11	RING (DD), JOG	(SF99/SF90:UX(SF),B(SF),VC(SF),NP(SF),EX)
11	3-054-859-21	RING (DD), JOG (SE85)	
11	3-054-859-31	RING (DD), JOG	(SF90:UX(WF),B(WF),VC(WF),NP(WF))
12	3-054-860-11	BUTTON (DD), CENTER	(SF99:UX,EN,NP,VC/SF90:UX(SF),VC(SF),NP(SF),EX)
12	3-054-860-21	BUTTON (DD), CENTER (SF99:B/SF90:B(SF))	
12	3-054-860-31	BUTTON (DD), CENTER (SE85:UX,NP,VC)	
12	3-054-860-41	BUTTON (DD), CENTER (SE85:B)	
12	3-054-860-51	BUTTON (DD), CENTER	(SF90:UX(WF),VC(WF),NP(WF))
12	3-054-860-61	BUTTON (DD), CENTER (SF90:B(WF))	
* 13	A-6791-912-A	AT-26 COMPLETE PC BOARD (SF99/SF90)	
14	3-054-861-11	PLATE (LEFT), FULCRUM	
* 15	A-6791-910-A	JK-171 COMPLETE PC BOARD	
16	1-762-844-31	SWITCH, ROTARY	
17	3-054-862-11	PLATE (RIGHT), FULCRUM	
* 18	A-6791-911-A	DM-86 COMPLETE PC BOARD	
* 19	A-6791-909-A	FR-161 COMPLETE PC BOARD	(SF90:VC(WF),VC(SF))
* 19	A-6791-921-A	FR-161 COMPLETE PC BOARD	(SF90:B(WF),B(SF))
* 19	A-6791-927-A	FR-161 COMPLETE PC BOARD (SE85:B)	
* 19	A-6791-930-A	FR-161 COMPLETE PC BOARD (SE85:VC)	
* 19	A-6791-931-A	FR-161 COMPLETE PC BOARD (SE85:NP)	
* 19	A-6791-932-A	FR-161 COMPLETE PC BOARD (SE85:UX)	
* 19	A-6791-933-A	FR-161 COMPLETE PC BOARD	(SF90:NP(WF),NP(SF))
* 19	A-6791-934-A	FR-161 COMPLETE PC BOARD	(SF90:UX(WF),UX(SF))
* 19	A-6791-935-A	FR-161 COMPLETE PC BOARD (SF90:EX)	
* 19	A-6791-956-A	FR-161 COMPLETE PC BOARD (SF99:VC)	
* 19	A-6791-957-A	FR-161 COMPLETE PC BOARD (SF99:EN)	
* 19	A-6791-958-A	FR-161 COMPLETE PC BOARD (SF99:B)	
* 19	A-6791-965-A	FR-161 COMPLETE PC BOARD (SF99:NP)	
* 19	A-6791-966-A	FR-161 COMPLETE PC BOARD (SF99:UX)	
* 20	A-6713-519-A	ML-17 COMPLETE PC BOARD	(SF99:B/SF90:B(WF),B(SF))
* 20	A-6713-520-A	ML-17 COMPLETE PC BOARD (SF99:EN)	
* 20	A-6791-915-A	ML-17 COMPLETE PC BOARD	(SF99:UX,NP,VC/SF90:UX(WF),VC(WF),NP(WF), UX(SF),VC(SF),NP(SF),EX)
21	3-363-099-01	SCREW (CASE 3 TP2) (SE85)	
21	3-363-099-11	SCREW (CASE 3 TP2) (SF99/SF90)	
22	4-921-277-41	SCREW (B2.6X8), TAPPING, BIND	
23	1-418-010-51	COMMANDER, STANDARD(RMT-V259D)	(SE85:UX,NP,VC)
23	1-418-010-61	COMMANDER, STANDARD(RMT-V259E)	(SE85:B)
23	1-418-010-71	COMMANDER, STANDARD(RMT-V259F)	(SF90:UX(SF),VC(SF),NP(SF),EX)
23	1-418-010-81	COMMANDER, STANDARD(RMT-V259G)	(SF90:B(SF))
23	1-418-373-11	COMMANDER, STANDARD(RMT-V260)	(SF99:EN)
23	1-418-374-11	COMMANDER, STANDARD(RMT-V260A)	(SF99:UX,NP,VC)
23	1-418-374-21	COMMANDER, STANDARD(RMT-V260B)	(SF99:B)
23	1-418-624-11	COMMANDER, STANDARD(RMT-V259H)	(SF90:UX(WF),VC(WF),NP(WF))
23	1-418-624-21	COMMANDER, STANDARD(RMT-V259J)	(SF90:B(WF))
* 25	3-987-684-21	CASE (BN), UPPER (SE85)	
25	3-987-684-91	CASE (BN), UPPER	(SF90:UX(WF),B(WF),VC(WF),NP(WF))
26	1-418-389-11	SWITCH BLOCK, CONTROL	(SF90:UX(SF),VC(SF),NP(SF),EX)
26	1-418-389-21	SWITCH BLOCK, CONTROL (SF90:B(SF))	
26	1-418-389-31	SWITCH BLOCK, CONTROL	(SF99:UX,EN,NP,VC)
26	1-418-389-41	SWITCH BLOCK, CONTROL (SF99:B)	
26	1-418-389-51	SWITCH BLOCK, CONTROL	(SF90:UX(WF),VC(WF),NP(WF))
26	1-418-389-61	SWITCH BLOCK, CONTROL (SF90:B(WF))	
28	1-790-720-11	CABLE, FLAT (FFL-9)	
29	1-790-718-11	CABLE, FLAT (FFM-31)	
30	1-790-719-11	CABLE, FLAT (FFD-5)	
31	3-054-863-11	HOLDER(DD), SHIELD	

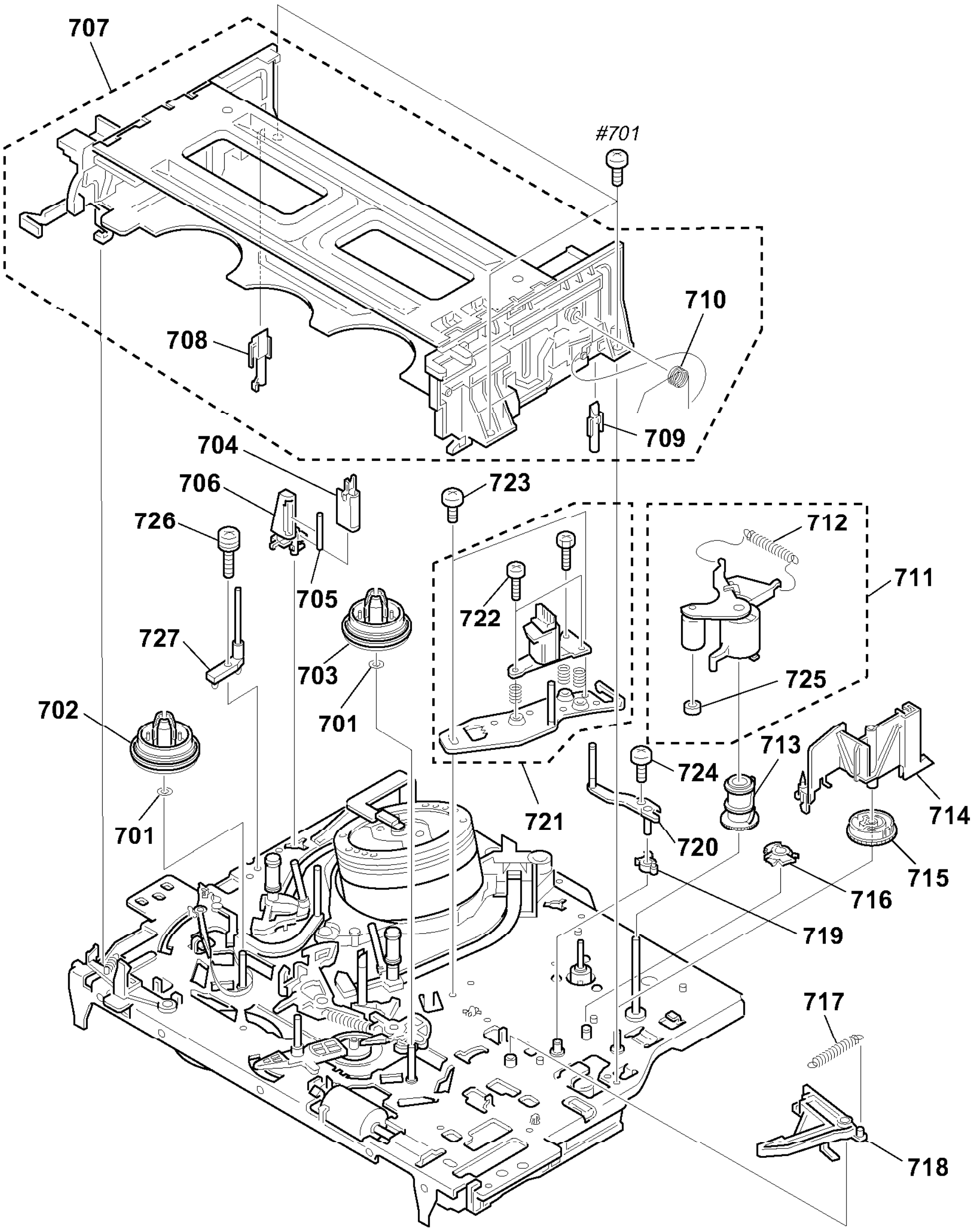
7-1-2. CHASSIS SECTION



Ref. No.	Part No.	Description	Remarks
* 51	A-6791-913-A	MA-359 COMPLETE PC BOARD (SF90:VC(WF),VC(SF))	
* 51	A-6791-917-A	MA-359 COMPLETE PC BOARD (SF90:UX(WF),UX(SF))	
* 51	A-6791-919-A	MA-359 COMPLETE PC BOARD (SF90:EX)	
* 51	A-6791-920-A	MA-359 COMPLETE PC BOARD (SF90:NP(WF),NP(SF))	
* 51	A-6791-922-A	MA-359 COMPLETE PC BOARD (SF90:B(WF),B(SF))	
* 51	A-6791-924-A	MA-359 COMPLETE PC BOARD (SE85:VC)	
* 51	A-6791-926-A	MA-359 COMPLETE PC BOARD (SE85:UX)	
* 51	A-6791-928-A	MA-359 COMPLETE PC BOARD (SE85:B)	
* 51	A-6791-929-A	MA-359 COMPLETE PC BOARD (SE85:NP)	
* 51	A-6791-960-A	MA-359 COMPLETE PC BOARD (SF99:EN)	
* 51	A-6791-961-A	MA-359 COMPLETE PC BOARD (SF99:VC)	
* 51	A-6791-962-A	MA-359 COMPLETE PC BOARD (SF99:NP)	
* 51	A-6791-963-A	MA-359 COMPLETE PC BOARD (SF99:B)	
* 51	A-6791-964-A	MA-359 COMPLETE PC BOARD (SF99:UX)	
52	1-779-725-11	CONNECTOR, BOARD TO BOARD 5P	
* 53	A-6791-916-A	AT-25 COMPLETE PC BOARD (SF99/SF90)	
54	3-978-737-11	CUSHION (FP), RUBBER	
55	3-970-608-21	SUMITITE (B3), +BV	
* 56	A-6791-914-A	RP-235 COMPLETE PC BOARD (SF90)	
* 56	A-6791-925-A	RP-235 COMPLETE PC BOARD (SE85)	
* 56	A-6791-971-A	RP-235 COMPLETE PC BOARD (SF99)	
⚠57	1-782-012-11	CORD, POWER (SE85)	
⚠57	1-783-931-11	CORD, POWER (SF99/SF90)	
58	3-053-407-41	PANEL (BN), REAR (SF90:B(WF),VC(WF),NP(WF),B(SF),VC(SF),NP(SF))	
58	3-053-407-51	PANEL (BN), REAR (SF90:UX(WF),UX(SF),EX)	
58	3-053-407-61	PANEL (BN), REAR (SE85:B,NP,VC)	
58	3-053-407-71	PANEL (BN), REAR (SE85:UX)	
58	3-053-407-81	PANEL (BN), REAR (SF99:EN)	
58	3-053-407-91	PANEL (BN), REAR (SF99:NP,B,VC)	
58	3-054-654-01	PANEL, REAR (SF99:UX)	
59	3-670-570-71	SPACER, SUPPORT	
⚠60	1-468-398-11	POWER BLOCK	
* 61	A-6791-959-A	NR-27 COMPLETE PC BOARD (SF99:UX,EN,NP,VC)	
* 61	A-6791-918-A	SE-90 COMPLETE PC BOARD (SF85:EXCEPT B/SF90:EXCEPT B(WF),B(SF)/SF99)	
* 61	A-6791-923-A	SE-90 COMPLETE PC BOARD (SF99:B/SF90:B(WF),B(SF)/SE85:B)	
62	3-050-878-01	HOLDER, ML (SF99/SF90)	
63	3-959-381-01	BASE (L), MD	
64	3-979-508-01	SCREW +HEXA TP SW 3X8	

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark	Les composants identifiés par une marque ⚠ sont critiques

7-1-3. MECHANISM DECK SECTION-1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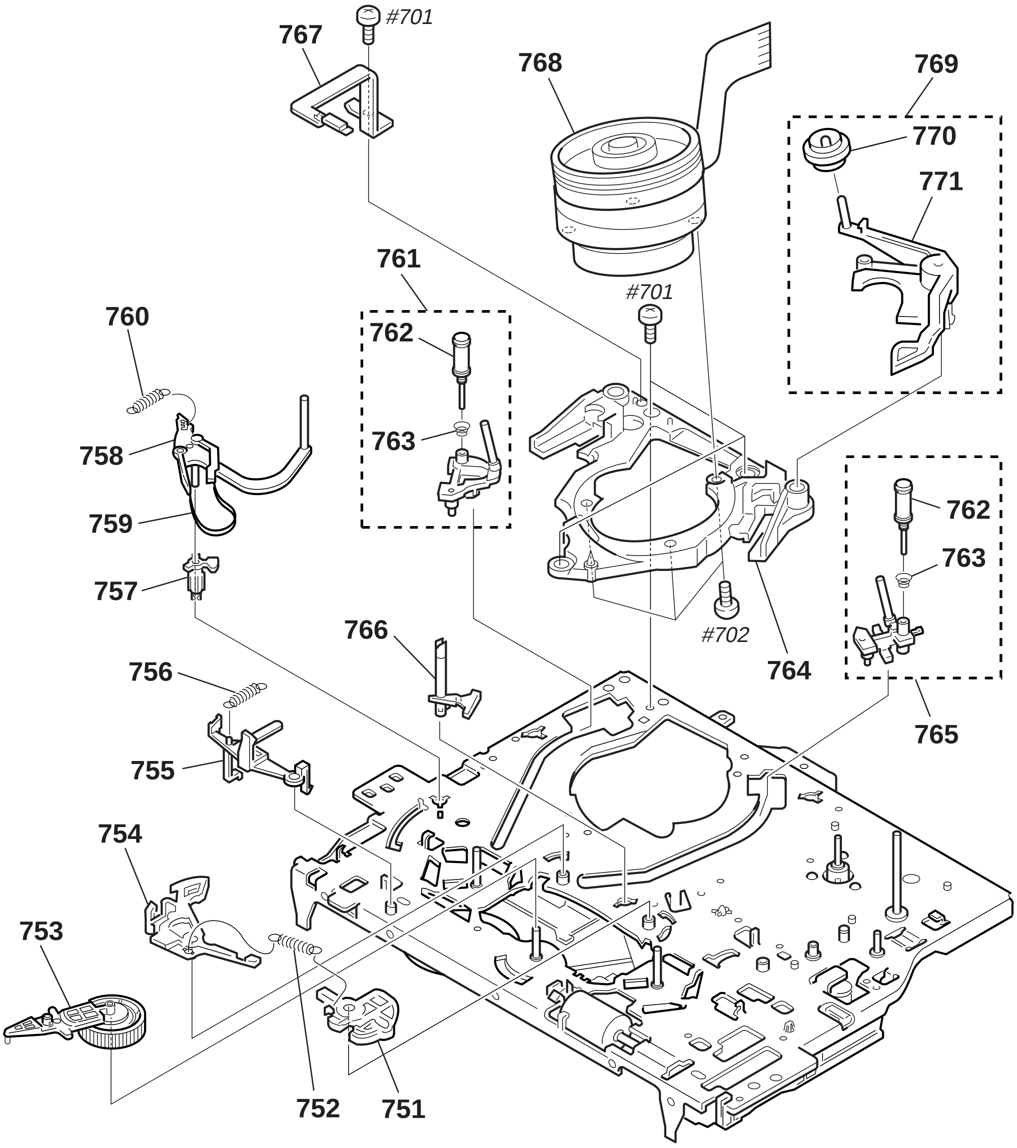
Ref. No.	Part No.	Description	Remarks
701	3-977-509-01	WASHER, THRUST	
702	3-977-507-01	TABLE, REEL (S)	
703	3-977-508-01	TABLE, REEL (T)	
704	1-500-144-11	HEAD, FE	
705	3-977-495-01	SHAFT TG2	
706	3-977-494-01	HOLDER, FEH	
707	A-6759-619-B	FL COMPLETE ASSY	
708	3-977-535-01	PLATE, LUMINOUS(END SENSOR)	
709	3-977-536-01	PLATE, LUMINOUS (TOP SENSOR)	
710	3-970-471-01	SPRING (DECK OPEN), TORSION	
711	A-6759-615-A	PRESS BLOCK ASSY, PINCH	
712	3-958-455-01	SPRING (PINCH), TENSION	
713	3-977-447-01	GEAR, ELEVATOR	
714	3-977-514-01	OPENER, LID	
715	3-977-441-03	GEAR, PINCH PRESSING	
716	3-977-445-02	GEAR, TG8 ARM DRIVING	
717	3-977-465-01	SPRING,EXTENSION(RVS BRAKE)	
718	X-3947-582-1	ARM ASSY, RVS BRAKE	
719	3-977-446-01	GEAR, TG8 ARM	
720	X-3947-590-1	TG8 ASSY	
721	A-6775-052-A	ACE BLOCK ASSY (ALPS)(EURO 2)	
722	3-974-556-11	+ HEXA TT 2.6X9 (TAPER)	
723	3-979-508-01	SCREW +HEXA TP SW 3X8	
724	3-719-381-01	SCREW (M2X4)	
725	3-736-045-01	BEARING (NO FLANG), BALL	
726	3-979-112-01	SCREW SW(+)BVTP 3X10	
727	X-3949-549-1	TG 0 ASSY	

7-1-4. MECHANISM DECK SECTION-2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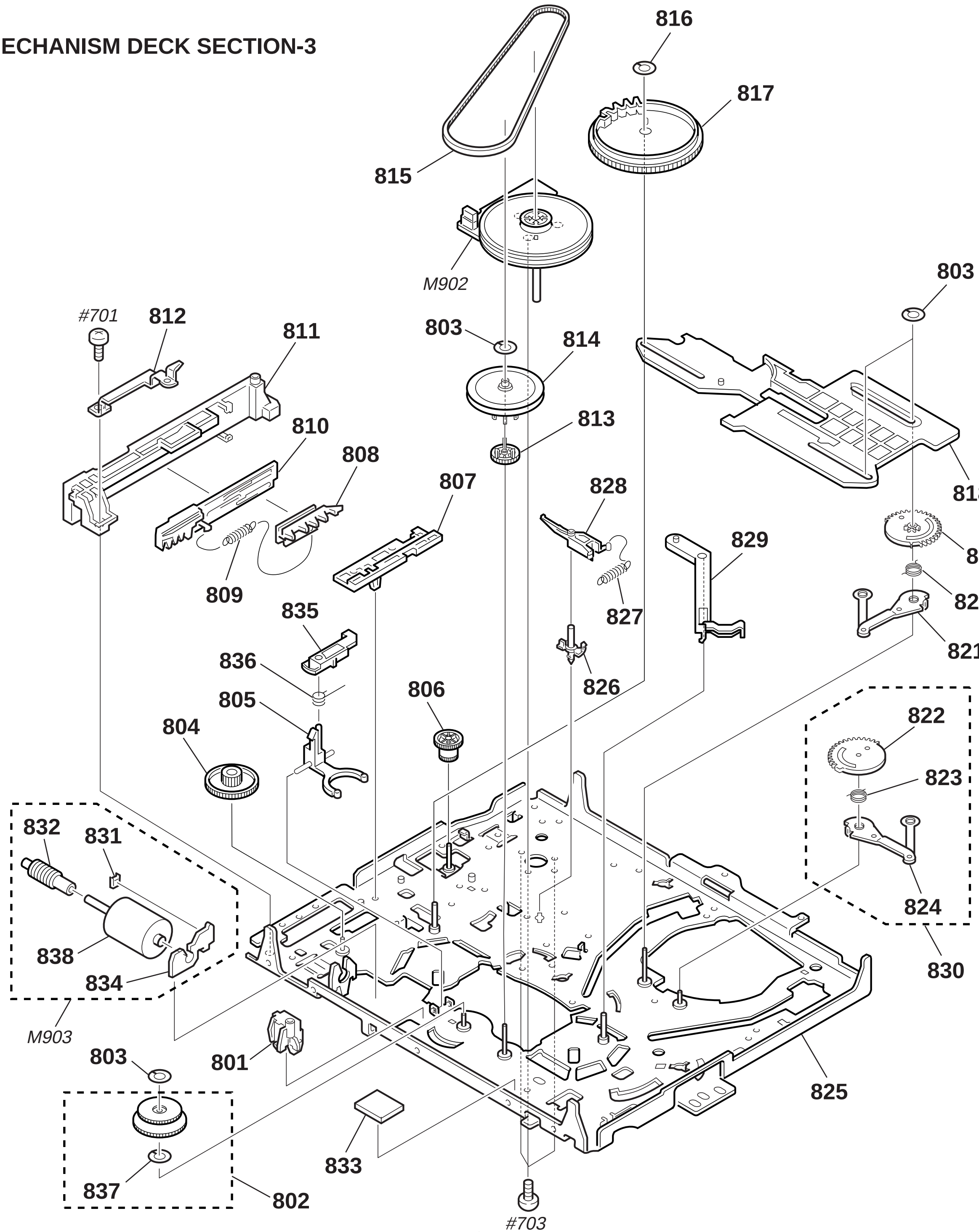
Ref. No.	Part No.	Description	Remarks
751	X-3949-363-1	BRAKE ASSY, MAIN (T)	
752	3-053-882-01	SPRING, TENS (MAIN BRAKE)	
753	X-3947-573-1	ARM ASSY, PENDULUM	
754	X-3949-362-1	BRAKE ASSY, MAIN (S)	
755	3-977-513-02	LEVER, REC. PROOF	
756	3-976-767-01	SPRING, TENS. (REC. PROOF)	
757	3-977-487-01	BOSS, TG1 FULCRUM	
758	X-3947-587-1	TG1 ASSY	
759	X-3947-589-1	BAND ASSY, TG1	
760	3-977-488-01	SPRING (POWER TENSION)	
761	A-6750-324-A	SHUTTLE (S) BLOCK ASSY	
762	X-3948-050-1	ROLLER ASS'Y, GUIDE	
763	3-965-178-01	SPRING	
764	3-969-632-04	BASE, DRUM	
765	A-6759-630-A	SHUTTLE (T) BLOCK ASSY	
766	3-977-501-01	PLATE, LUMINOUS	
767	X-3943-899-8	GROUND ASSY, SHAFT	
768	1-759-373-22	DRUM ASSY (DZH-86A-R)	(SE85:NP,VC,UX/SF90:NP,VC,UX,EX/SF99:EN,NP,UX,VC)
768	1-759-557-22	DRUM ASSY (DZH-98A-R)	(SE85:B/SF90:B/SF99:B)
769	A-6746-074-G	ROLLER BLOCK ASSY, HC	
770	X-3947-255-1	ROLLER ASSY, HC	
771	3-975-724-07	ARM, HC	

7-1-5. MECHANISM DECK SECTION-3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Ref. No.	Part No.	Description	Remarks
801	3-977-437-01	RETAINER,CAM MOTOR	
802	X-3949-364-1	ASSY, REEL DIRECT SELECT (B)	
803	3-977-443-01	WASHER, STOPPER	
804	3-977-438-01	WORM - WHEEL	
805	3-053-888-01	BASE, DIRECT SELECT (B)	
806	3-977-444-01	GEAR, PINCH TRANSMISSION	
807	3-977-515-01	GUIDE, FL SLIDER	
808	3-977-517-01	PLATE, SLIDE, FL	
809	3-977-519-01	SPRING, TENS. (LIMIT, FL)	
810	3-977-518-02	PLATE, LIMITTER, FL	
811	3-977-516-01	HOLDER, FL SLIDER	
812	3-977-877-01	PLATE, RETAINER	
813	3-977-504-01	GEAR, CLUTCH	
814	X-3949-365-1	GEAR ASSY PULLEY (B)	
815	3-977-510-01	BELT, RUBBER	
816	3-977-440-01	WASHER, STOPPER	
817	3-977-439-01	GEAR, CAM	
818	3-053-878-01	SLIDER (B)	
819	3-977-455-01	GEAR, LOADING(T)	
820	3-977-456-03	SPRING, TORSION (LOAD T)	
821	X-3947-579-1	LEVER ASSY, LOADING(T)	
822	3-977-451-01	GEAR, LOADING(S)	
823	3-977-452-01	SPRING, TORSION (LOAD S)	
824	X-3947-578-1	LEVER ASSY, LOADING(S)	
825	X-3947-576-2	CHASSIS ASSY, MECHANICAL	
826	3-977-468-01	SHAFT, CAPSTAN BRAKE	
827	3-977-467-02	SPRING, CAP BRAKE	
828	X-3947-583-1	BRAKE ASSY, CAPSTAN	
829	3-977-489-01	ARM, TG1 DRIVING	
830	A-6759-616-A	GEAR BLOCK ASSY, LOADING(S)	
831	1-766-723-21	CONNECTOR, BOARD TO BOARD 3P	
832	3-977-436-01	WORM	
833	3-989-917-01	SPACER (REC PROOF)	
834	1-666-524-11	PWB, CA-55	
835	3-053-887-01	ARM, DIRECT SELECT (B)	
836	3-053-889-01	SPRING, TORSION(DIRECT SELECT)	
837	3-974-477-01	WASHER, (GEAR, LIMITTER)	
838	1-541-309-11	MOTOR, L (RF-370C)	
M902	1-698-971-11	MOTOR, DC (CAPSTAN)	
M903	X-3947-577-1	MOTOR ASSY, CAM	

7-2. ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: µF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: µH
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks
*	A-6791-916-A	AT-25 COMPLETE BOARD, COMPLETE	(SF90/SF99)
		*************************************	(Ref.No.:2000 Series)
	3-987-343-11	HOLDER, AN	
		< CAPACITOR >	
C991	1-163-136-00	CERAMIC CHIP 620PF 1%	50V
		< CONNECTOR >	
CN990	1-506-468-11	PIN, CONNECTOR 3P	
		< RESISTOR >	
R990	1-216-295-91	SHORT 0	
R991	1-216-295-91	SHORT 0	

Ref. No.	Part No.	Description	Remarks
*	A-6791-912-A	AT-26 COMPLETE BOARD, COMPLETE	(SF90/SF99)
		*************************************	(Ref.No.:2000 Series)
	3-054-863-11	HOLDER (DD), SHIELD (SF90/SF99)	
		< CAPACITOR >	
C995	1-125-830-91	CERAMIC CHIP 680PF 1%	50V (SF90/SF99)
C996	1-163-245-11	CERAMIC CHIP 56PF 5%	50V (SF90/SF99)
		< CONNECTOR >	
CN995	1-506-468-11	PIN, CONNECTOR 3P (SF90/SF99)	

Ref. No.	Part No.	Description	Remarks
*	A-6791-911-A	DM-86 COMPLETE BOARD, COMPLETE	
		*******************************	(Ref.No.:3000 Series)
	1-790-719-11	CABLE, FLAT (FFD-5)	
		< CAPACITOR >	
C451	1-163-038-91	CERAMIC CHIP 0.1uF	25V
		< CONNECTOR >	
CN451	1-784-484-11	CONNECTOR, FFC/FPC 5P	
CN452	1-784-449-11	CONNECTOR, FFC/FPC 7P	
		< DIODE >	
D459	8-719-056-06	DIODE SLR-342DCT31(JOG)	
		< RESISTOR >	
R459	1-216-033-00	METAL CHIP 220 5%	1/10W
R464	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R465	1-216-073-00	METAL CHIP 10K 5%	1/10W
R466	1-216-073-00	METAL CHIP 10K 5%	1/10W
R467	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R468	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R469	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R471	1-216-061-00	METAL CHIP 3.3K 5%	1/10W
R472	1-216-065-91	RES,CHIP 4.7K 5%	1/10W
		< SWITCH >	
S451	1-771-410-21	SWITCH, TACT(● REC)	
S453	1-771-410-21	SWITCH, TACT(◀◀ REW)	
S457	1-771-410-21	SWITCH, TACT(▶▶ FF)	
S458	1-771-410-21	SWITCH, TACT(❚❚ PAUSE)	
S459	1-771-410-21	SWITCH, TACT(JOG)	

FR-161

Ref. No.	Part No.	Description	Remarks
*	A-6791-909-A	FR-161 COMPLETE BOARD, COMPLETE	(SF90:VC(WF),VC(SF))
		**	
*	A-6791-921-A	FR-161 COMPLETE BOARD, COMPLETE	(SF90:B(WF),B(SF))
		**	
*	A-6791-927-A	FR-161 COMPLETE BOARD, COMPLETE	(SE85:B)
		**	
*	A-6791-930-A	FR-161 COMPLETE BOARD, COMPLETE	(SE85:VC)
		**	
*	A-6791-931-A	FR-161 COMPLETE BOARD, COMPLETE	(SE85:NP)
		**	
*	A-6791-932-A	FR-161 COMPLETE BOARD, COMPLETE	(SE85:UX)
		**	
*	A-6791-933-A	FR-161 COMPLETE BOARD, COMPLETE	(SF90:NP(WF),NP(SF))
		**	
*	A-6791-934-A	FR-161 COMPLETE BOARD, COMPLETE	(SF90:UX(WF),UX(SF))
		**	
*	A-6791-935-A	FR-161 COMPLETE BOARD, COMPLETE	(SF90:EX)
		**	
*	A-6791-956-A	FR-161 COMPLETE BOARD, COMPLETE	(SF99:VC)
		**	
*	A-6791-957-A	FR-161 COMPLETE BOARD, COMPLETE	(SF99:EN)
		**	
*	A-6791-958-A	FR-161 COMPLETE BOARD, COMPLETE	(SF99:B)
		**	
*	A-6791-965-A	FR-161 COMPLETE BOARD, COMPLETE	(SF99:NP)
		**	
*	A-6791-966-A	FR-161 COMPLETE BOARD, COMPLETE	(SF99:UX)
		**	(Ref.No.:3000 Series)
	1-790-718-11	CABLE, FLAT (FFM-31)	
		< BUZZER >	
BZ181	1-529-104-11	BUZZER, PIEZOELECTRIC (EXCEPT SF99:UX)	

Ref. No.	Part No.	Description			Remarks
		< CAPACITOR >			
C180	1-163-038-91	CERAMIC CHIP	0.1uF		25V (EXCEPT SF99:UX)
C188	1-163-104-00	CERAMIC CHIP	30PF	5%	50V (EXCEPT SF99:UX)
C190	1-115-456-21	DOUBLE LAYER	0.22F	0	5.5V (EXCEPT SF99:UX)
C191	1-163-038-91	CERAMIC CHIP	0.1uF		25V (EXCEPT SF99:UX)
C192	1-126-916-11	ELECT	1000uF	20%	6.3V (EXCEPT SF99:UX)
C193	1-163-031-11	CERAMIC CHIP	0.01uF		50V (EXCEPT SF99:UX)
C196	1-128-057-11	ELECT	330uF	20%	6.3V (EXCEPT SF99:UX)
C198	1-163-031-11	CERAMIC CHIP	0.01uF		50V (EXCEPT SF99:UX)
C199	1-163-031-11	CERAMIC CHIP	0.01uF		50V (EXCEPT SF99:UX)
C200	1-163-038-91	CERAMIC CHIP	0.1uF		25V (EXCEPT SF99:UX)
C400	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V (EXCEPT SF99:UX)
C401	1-163-231-11	CERAMIC CHIP	15PF	5%	50V (EXCEPT SF99:UX)
C402	1-163-231-11	CERAMIC CHIP	15PF	5%	50V (EXCEPT SF99:UX)
C403	1-163-231-11	CERAMIC CHIP	15PF	5%	50V (EXCEPT SF99:UX)
C421	1-165-319-11	CERAMIC CHIP	0.1uF		50V (EXCEPT SF99:UX)
C422	1-104-664-11	ELECT	47uF	20%	16V (EXCEPT SF99:UX)
C423	1-163-031-11	CERAMIC CHIP	0.01uF		50V (EXCEPT SF99:UX)
C424	1-165-319-11	CERAMIC CHIP	0.1uF		50V (EXCEPT SF99:UX)
C495	1-163-038-91	CERAMIC CHIP	0.1uF		25V (EXCEPT SF99:UX)
C496	1-163-038-91	CERAMIC CHIP	0.1uF		25V (EXCEPT SF99:UX)
C497	1-163-263-11	CERAMIC CHIP	330PF	5%	50V (EXCEPT SF99:UX)
		< CONNECTOR >			
CN400	1-784-449-11	CONNECTOR, FFC/FPC 7P (EXCEPT SF99:UX)			
CN401	1-695-328-11	PIN, CONNECTOR (PC BOARD) 5P (SF90/SF99)			
CN402	1-784-512-11	CONNECTOR, FFC/FPC 33P			
		< TRIMMER >			
CT180	1-141-442-91	CAP, CERAMIC TRIMMER 20PF			(EXCEPT SF99:UX)
		< DIODE >			
D188	8-719-075-84	DIODE S1G-G2P (EXCEPT SF99:UX)			
D189	8-719-075-84	DIODE S1G-G2P (EXCEPT SF99:UX)			
D400	8-719-056-07	DIODE SLR-342MCT31 (EXCEPT SF99:UX)			
D420	8-719-070-61	DIODE PDZ8.2B-115 (EXCEPT SF99:UX)			
D421	8-719-056-06	DIODE SLR-342DCT31 (SF99:UX,EN,NP,VC)			

Ref. No.	Part No.	Description	Remarks
D422	8-719-056-06	DIODE SLR-342DCT31 (EXCEPT SF99:UX)	
D423	8-719-056-06	DIODE SLR-342DCT31 (SF90/SF99)	
		< FERRITE BEAD >	
FB407	1-414-234-22	INDUCTOR CHIP 0UH (SF90/SF99)	
FB407	1-216-295-91	SHORT 0 (SE85)	
FB408	1-414-234-22	INDUCTOR CHIP 0UH (SF90/SF99)	
FB408	1-216-295-91	SHORT 0 (SE85)	
FB409	1-414-234-22	INDUCTOR CHIP 0UH (SF90/SF99)	
FB409	1-216-295-91	SHORT 0 (SE85)	
FB410	1-414-234-22	INDUCTOR CHIP 0UH (SF90/SF99)	
FB410	1-216-295-91	SHORT 0 (SE85)	
		< FERRITE BEAD >	
FB411	1-500-245-11	INDUCTOR CHIP 0UH (EXCEPT SF99:UX)	
FB412	1-500-245-11	INDUCTOR CHIP 0UH (EXCEPT SF99:UX)	
		< IC >	
IC180	8-759-576-20	IC S579658PJ (SF99:UX,NP,VC)	
IC180	8-759-576-21	IC S579659PJ (SF99:B)	
IC180	8-759-576-22	IC S579660PJ (SF90:UX(WF),VC(WF),NP(WF),UX(SF), VC(SF),NP(SF),EX/SE85:UX,NP,VC)	
IC180	8-759-576-23	IC S579661PJ (SF90:B(WF),B(SF)/SE85:B)	
IC180	8-759-576-24	IC S579662PJ (SF99:EN)	
IC182	8-759-527-77	IC M24C16-MN6T (EXCEPT SF99:UX)	
IC183	8-759-248-87	IC MM1256XF-BE (EXCEPT SF99:UX)	
IC400	8-749-011-05	IC GP1U28X (EXCEPT SF99:UX)	
IC420	8-759-438-82	IC uPD16311GC-AB6 (EXCEPT SF99:UX)	
		< JUMPER RESISTOR >	
JR401	1-216-295-91	SHORT 0 (EXCEPT SF99:UX)	
JR402	1-216-296-91	SHORT 0 (EXCEPT SF99:UX)	
JR403	1-216-296-91	SHORT 0 (EXCEPT SF99:UX)	
JR404	1-216-295-91	SHORT 0 (EXCEPT SF99:UX)	
JR405	1-216-296-91	SHORT 0 (EXCEPT SF99:UX)	
JR406	1-216-296-91	SHORT 0 (EXCEPT SF99:UX)	
JR407	1-216-295-91	SHORT 0 (EXCEPT SF99:UX)	
JS181	1-216-295-91	SHORT 0 (EXCEPT SF99:UX)	
JS183	1-216-295-91	SHORT 0 (SE85)	
		< COIL >	
L182	1-414-934-21	INDUCTOR 10uH (EXCEPT SF99:UX)	
		< FLUORESCENT INDICATOR >	
ND420	1-517-745-21	TUBE, FLUORESCENT INDICATOR	
		< TRANSISTOR >	
Q400	8-729-043-29	TRANSISTOR PDTC144EK-115	
		< RESISTOR >	
R180	1-216-073-00	METAL CHIP 10K 5%	1/10W
R181	1-216-073-00	METAL CHIP 10K 5%	1/10W
R182	1-216-295-91	SHORT 0	
R183	1-216-295-91	SHORT 0	
R184	1-216-113-00	METAL CHIP 470K 5%	1/10W

Ref. No.	Part No.	Description	Remarks
R185	1-216-073-00	METAL CHIP 10K 5%	1/10W
R188	1-216-049-91	RES,CHIP 1K 5%	1/10W
R189	1-216-041-00	METAL CHIP 470 5%	1/10W
R191	1-216-073-00	METAL CHIP 10K 5%	1/10W
R192	1-216-049-91	RES,CHIP 1K 5%	1/10W
R194	1-216-041-00	METAL CHIP 470 5%	1/10W
R195	1-216-049-91	RES,CHIP 1K 5%	1/10W
R196	1-216-049-91	RES,CHIP 1K 5%	1/10W
R197	1-216-049-91	RES,CHIP 1K 5%	1/10W
R198	1-216-049-91	RES,CHIP 1K 5%	1/10W
R199	1-216-037-00	METAL CHIP 330 5%	1/10W
R201	1-216-295-91	SHORT 0	
R202	1-216-095-00	METAL CHIP 82K 5%	1/10W
R203	1-216-113-00	METAL CHIP 470K 5%	1/10W
R204	1-218-179-11	RES,CHIP 10M 5%	1/10W
R205	1-216-041-00	METAL CHIP 470 5%	1/10W (EXCEPT SF90:B(SF))
R206	1-216-073-00	METAL CHIP 10K 5%	1/10W (EXCEPT SF90:B(SF))
R400	1-216-029-00	METAL CHIP 150 5%	1/10W
R401	1-216-089-91	RES,CHIP 47K 5%	1/10W
R405	1-216-095-00	METAL CHIP 82K 5%	1/10W (SF90/SF99)
R405	1-216-073-00	METAL CHIP 10K 5%	1/10W (SE85)
R406	1-216-073-00	METAL CHIP 10K 5%	1/10W
R407	1-216-073-00	METAL CHIP 10K 5%	1/10W
R408	1-216-061-00	METAL CHIP 3.3K 5%	1/10W (SF90/SF99)
R408	1-216-057-00	METAL CHIP 2.2K 5%	1/10W (SE85)
R409	1-216-067-00	METAL CHIP 5.6K 5%	1/10W (SF90/SF99)
R409	1-216-057-00	METAL CHIP 2.2K 5%	1/10W (SE85)
R410	1-216-095-00	METAL CHIP 82K 5%	1/10W (SF90/SF99)
R410	1-216-073-00	METAL CHIP 10K 5%	1/10W (SE85)
R411	1-216-295-91	SHORT 0 (SF90/SF99)	
R411	1-216-057-00	METAL CHIP 2.2K 5%	1/10W (SE85)
R412	1-216-057-00	METAL CHIP 2.2K 5%	1/10W (SF90/SF99)
R413	1-216-033-00	METAL CHIP 220 5%	1/10W (SF99:UX,EN,NP,VC)
R414	1-216-033-00	METAL CHIP 220 5%	1/10W
R415	1-216-033-00	METAL CHIP 220 5%	1/10W (SF90/SF99)
R416	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R418	1-216-073-00	METAL CHIP 10K 5%	1/10W
R422	1-216-049-91	RES,CHIP 1K 5%	1/10W
R423	1-216-049-91	RES,CHIP 1K 5%	1/10W
R424	1-216-049-91	RES,CHIP 1K 5%	1/10W
R425	1-216-085-00	METAL CHIP 33K 5%	1/10W
R426	1-216-073-00	METAL CHIP 10K 5%	1/10W
R427	1-216-069-00	METAL CHIP 6.8K 5%	1/10W
R428	1-216-073-00	METAL CHIP 10K 5%	1/10W
R429	1-216-065-91	RES,CHIP 4.7K 5%	1/10W

Ref. No.	Part No.	Description			Remarks
R430	1-216-073-00	METAL CHIP	10K	5%	1/10W
R492	1-216-037-00	METAL CHIP	330	5%	1/10W
		< SWITCH >			
S400	1-771-410-21	SWITCH, TACT			
S401	1-771-410-21	SWITCH, TACT			
S402	1-771-410-21	SWITCH, TACT			
S403	1-771-410-21	SWITCH, TACT			
S404	1-771-410-21	SWITCH, TACT			
S405	1-771-410-21	SWITCH, TACT			
		< VIBRATOR >			
X180	1-760-014-11	VIBRATOR, CERAMIC			
X181	1-579-463-11	VIBRATOR, CRYSTAL			

Ref. No.	Part No.	Description			Remarks
*	A-6791-910-A	JK-171 COMPLETE BOARD, COMPLETE *********************************			
					(Ref.No.:3000 Series)
		< CAPACITOR >			
C481	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C491	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C493	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
		< CONNECTOR >			
* CN480	1-568-954-11	PIN, CONNECTOR 5P			
		< DIODE >			
D480	8-719-070-59	DIODE PDZ6.8B-115			
D490	8-719-071-50	DIODE BZA408B-115			
		< JACK >			
J480	1-774-509-11	JACK, PIN 3P			
		< JUMPER RESISTOR >			
JR480	1-216-296-91	SHORT	0		
JR481	1-216-295-91	SHORT	0		
JS490	1-216-295-91	SHORT	0		
		< RESISTOR >			
R480	1-216-022-00	METAL CHIP	75	5%	1/10W
R481	1-216-295-91	SHORT	0		
R490	1-216-295-91	SHORT	0		
R491	1-216-295-91	SHORT	0		

Ref. No.	Part No.	Description			Remarks
*	A-6791-913-A	MA-359 COMPLETE BOARD, COMPLETE			(SF90:VC(WF),VC(SF))
		**			
*	A-6791-917-A	MA-359 COMPLETE BOARD, COMPLETE			(SF90:UX(WF),UX(SF))
		**			
*	A-6791-919-A	MA-359 COMPLETE BOARD, COMPLETE			(SF90:EX)
		**			
*	A-6791-920-A	MA-359 COMPLETE BOARD, COMPLETE			(SF90:NP(WF),NP(SF))
		**			
*	A-6791-922-A	MA-359 COMPLETE BOARD, COMPLETE			(SF90:B(WF),B(SF))
		**			
*	A-6791-924-A	MA-359 COMPLETE BOARD, COMPLETE			(SE85:VC)
		**			
*	A-6791-926-A	MA-359 COMPLETE BOARD, COMPLETE			(SE85:UX)
		**			
*	A-6791-928-A	MA-359 COMPLETE BOARD, COMPLETE			(SE85:B)
		**			
*	A-6791-929-A	MA-359 COMPLETE BOARD, COMPLETE			(SE85:NP)
		**			
*	A-6791-960-A	MA-359 COMPLETE BOARD, COMPLETE			(SF99:EN)
		**			
*	A-6791-961-A	MA-359 COMPLETE BOARD, COMPLETE			(SF99:VC)
		**			
*	A-6791-962-A	MA-359 COMPLETE BOARD, COMPLETE			(SF99:NP)
		**			
*	A-6791-963-A	MA-359 COMPLETE BOARD, COMPLETE			(SF99:B)
		**			
*	A-6791-964-A	MA-359 COMPLETE BOARD, COMPLETE			(SF99:UX)
		**			
					(Ref.No.:1000 Series)
*	3-960-273-01	SPACER, TOP END			
*	3-960-274-01	SPACER, LED			
		< CAPACITOR >			
C001	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C002	1-126-933-11	ELECT	100uF	20%	16V
C003	1-164-346-11	CERAMIC CHIP	1uF		16V
C004	1-126-963-11	ELECT	4.7uF	20%	50V
C006	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V

Ref. No.	Part No.	Description			Remarks
C007	1-126-964-11	ELECT	10uF	20%	50V
C008	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C009	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C010	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C100	1-128-057-11	ELECT	330uF	20%	6.3V
C101	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C102	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C103	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C104	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C105	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C107	1-130-489-00	MYLAR	0.033uF	5%	50V
C108	1-137-441-11	FILM	0.027uF	5%	50V
C109	1-126-157-11	ELECT	10uF	20%	16V
C110	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C111	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C130	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C131	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C132	1-124-589-11	ELECT	47uF	20%	16V
C134	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C150	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C159	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C160	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C161	1-124-589-11	ELECT	47uF	20%	16V
C162	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C164	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C165	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C166	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C167	1-124-589-11	ELECT	47uF	20%	16V
C170	1-124-589-11	ELECT	47uF	20%	16V
C172	1-164-346-11	CERAMIC CHIP	1uF		16V
C175	1-128-131-11	ELECT	22uF	20%	50V
C176	1-128-131-11	ELECT	22uF	20%	50V
C177	1-128-131-11	ELECT	22uF	20%	50V
C178	1-124-257-00	ELECT	2.2uF	20%	50V
C179	1-124-589-11	ELECT	47uF	20%	16V
C200	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C201	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C202	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C203	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C204	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C205	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C206	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C207	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C208	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C209	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C210	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C211	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C212	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C213	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C214	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C215	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C216	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C217	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C219	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C220	1-124-589-11	ELECT	47uF	20%	16V
C221	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C222	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C223	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C224	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C225	1-124-589-11	ELECT	47uF	20%	16V
C226	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C227	1-124-589-11	ELECT	47uF	20%	16V
C228	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C229	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C230	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C231	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C232	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C233	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C234	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C235	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C236	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C237	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C238	1-126-157-11	ELECT	10uF	20%	16V
C239	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C240	1-163-243-11	CERAMIC CHIP	47PF	5%	50V
C241	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C242	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C243	1-163-809-11	CERAMIC CHIP	0.047uF	10%	25V
C244	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C245	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C246	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C247	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C248	1-124-589-11	ELECT	47uF	20%	16V
C249	1-126-157-11	ELECT	10uF	20%	16V
C250	1-124-589-11	ELECT	47uF	20%	16V
C251	1-126-153-11	ELECT	22uF	20%	6.3V
C252	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C253	1-163-139-00	CERAMIC CHIP	820PF	5%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C254	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C255	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C306	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C307	1-126-157-11	ELECT	10uF	20%	16V
C308	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C309	1-137-370-11	FILM	0.01uF	5%	50V
C310	1-126-163-11	ELECT	4.7uF	20%	50V
C312	1-124-589-11	ELECT	47uF	20%	16V
C314	1-126-157-11	ELECT	10uF	20%	16V
C315	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C316	1-126-163-11	ELECT	4.7uF	20%	50V
C317	1-163-011-11	CERAMIC CHIP	0.0015uF	10%	50V
C318	1-126-160-11	ELECT	1uF	20%	50V
C320	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C321	1-124-589-11	ELECT	47uF	20%	16V
C322	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C323	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C360	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C361	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C362	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C363	1-126-933-11	ELECT	100uF	20%	16V
C364	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V

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Ref. No.	Part No.	Description			Remarks
C365	1-126-960-11	ELECT	1uF	20%	50V
C366	1-126-960-11	ELECT	1uF	20%	50V
C367	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C368	1-126-960-11	ELECT	1uF	20%	50V
C369	1-126-967-11	ELECT	47uF	20%	50V
C370	1-126-960-11	ELECT	1uF	20%	50V
C371	1-126-964-11	ELECT	10uF	20%	50V
C372	1-126-960-11	ELECT	1uF	20%	50V
C373	1-124-257-00	ELECT	2.2uF	20%	50V
C374	1-126-960-11	ELECT	1uF	20%	50V
C375	1-126-960-11	ELECT	1uF	20%	50V
C376	1-126-960-11	ELECT	1uF	20%	50V
C377	1-126-964-11	ELECT	10uF	20%	50V
C378	1-126-960-11	ELECT	1uF	20%	50V
					(SE85:B,NP,VC/SF90/SF99)
C379	1-126-967-11	ELECT	47uF	20%	50V
C380	1-163-016-00	CERAMIC CHIP	0.0039uF	10%	50V
C381	1-126-964-11	ELECT	10uF	20%	50V
C382	1-126-160-11	ELECT	1uF	20%	50V
C383	1-126-964-11	ELECT	10uF	20%	50V
C384	1-126-964-11	ELECT	10uF	20%	50V
C385	1-126-964-11	ELECT	10uF	20%	50V
C386	1-126-964-11	ELECT	10uF	20%	50V
C387	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C388	1-124-261-00	ELECT	10uF	20%	50V
					(EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)
C389	1-126-964-11	ELECT	10uF	20%	50V
					(EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)
C390	1-126-960-11	ELECT	1uF	20%	50V
					(EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX)
C391	1-126-960-11	ELECT	1uF	20%	50V
					(EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX)
C500	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C501	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C502	1-126-160-11	ELECT	1uF	20%	50V
					(SF99)
C503	1-126-160-11	ELECT	1uF	20%	50V
					(SF99)
C505	1-126-157-11	ELECT	10uF	20%	16V
					(SF99)
C506	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
					(SF99)
C510	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C511	1-104-664-11	ELECT	47uF	20%	16V
C512	1-104-664-11	ELECT	47uF	20%	16V
C513	1-126-935-11	ELECT	470uF	20%	6.3V
C520	1-126-935-11	ELECT	470uF	20%	6.3V
					(SF99)
C570	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C571	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V
C611	1-104-664-11	ELECT	47uF	20%	16V
C612	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C613	1-126-933-11	ELECT	100uF	20%	16V
C615	1-124-589-11	ELECT	47uF	20%	16V
C616	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C660	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
					(SF99:EN,B/SF90:B(WF),B(SF)/SE85:B)
C661	1-104-664-11	ELECT	47uF	20%	16V
C662	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C663	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C665	1-104-664-11	ELECT	47uF	20%	16V

Ref. No.	Part No.	Description			Remarks
C668	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C669	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C670	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C671	1-163-229-11	CERAMIC CHIP	12PF	5%	50V
C672	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C673	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C674	1-104-664-11	ELECT	47uF	20%	16V
C675	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C676	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C677	1-126-960-11	ELECT	1uF	20%	50V
C678	1-126-961-11	ELECT	2.2uF	20%	50V
C678	1-126-960-11	ELECT	1uF	20%	50V
					(SE85:UX)
C679	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C680	1-163-139-00	CERAMIC CHIP	820PF	5%	50V
C681	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C682	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C690	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C701	1-126-964-11	ELECT	10uF	20%	50V
C702	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C704	1-126-964-11	ELECT	10uF	20%	50V
C705	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C708	1-104-664-11	ELECT	47uF	20%	16V
C709	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C710	1-126-965-11	ELECT	22uF	20%	50V
C730	1-126-964-11	ELECT	10uF	20%	50V
C731	1-126-964-11	ELECT	10uF	20%	50V
C752	1-126-933-11	ELECT	100uF	20%	16V
C753	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C755	1-126-935-11	ELECT	470uF	20%	6.3V
C756	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C850	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C851	1-126-157-11	ELECT	10uF	20%	16V
C852	1-164-161-11	CERAMIC CHIP	0.0022uF	10%	100V
C853	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V
C855	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C856	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C890	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
					(SE85/SF90:UX,NP,B,VC)
C891	1-124-589-11	ELECT	47uF	20%	16V
					(SE85/SF90:UX,NP,B,VC)
C892	1-163-038-91	CERAMIC CHIP	0.1uF		25V
					(SE85/SF90:UX,NP,B,VC)
C893	1-163-038-91	CERAMIC CHIP	0.1uF		25V
					(SE85/SF90:UX,NP,B,VC)
C894	1-124-589-11	ELECT	47uF	20%	16V
					(SE85/SF90:UX,NP,B,VC)
		< CONNECTOR >			
CN101	1-779-724-11	CONNECTOR, BOARD TO BOARD 5P			
CN102	1-779-723-11	CONNECTOR, BOARD TO BOARD 9P			
CN104	1-766-716-11	CONNECTOR, BOARD TO BOARD 3P			
CN164	1-784-512-11	CONNECTOR, FFC/FPC 33P			
CN165	1-506-469-11	PIN, CONNECTOR 4P			
CN166	1-784-494-11	CONNECTOR, FFC/FPC 15P			
CN167	1-506-468-11	PIN, CONNECTOR 3P			
CN200	1-573-843-11	CONNECTOR, BOARD TO BOARD 11P			
					(SE85:B/SF90:B(WF),B(SF)/SF99)
CN203	1-573-852-11	CONNECTOR, BOARD TO BOARD 20P			
CN204	1-573-843-11	CONNECTOR, BOARD TO BOARD 11P			

Ref. No.	Part No.	Description	Remarks
CN500	1-784-415-11	CONNECTOR, SQUARE TYPE 21P	
CN500	1-785-636-11	CONNECTOR, SQUARE TYPE 21P	
* CN501	1-568-954-11	PIN, CONNECTOR 5P	
CN570	1-784-415-11	CONNECTOR, SQUARE TYPE 21P	
CN570	1-785-636-11	CONNECTOR, SQUARE TYPE 21P	
CN601	1-784-641-11	CONNECTOR, BOARD TO BOARD 11P	
CN602	1-784-641-11	CONNECTOR, BOARD TO BOARD 11P	
		< DIODE >	
D102	8-719-048-26	DIODE GL528V1	
D107	8-719-988-61	DIODE 1SS355TE-17	
D108	8-719-200-82	DIODE MPG06D-6052PKG3	
D109	8-719-921-42	DIODE MTZJ-T-77-5.1A	
D131	8-719-200-82	DIODE MPG06D-6052PKG3	
D132	8-719-200-82	DIODE MPG06D-6052PKG3	
D508	8-719-070-59	DIODE PDZ6.8B-115	
D509	8-719-070-59	DIODE PDZ6.8B-115	
D510	8-719-070-59	DIODE PDZ6.8B-115	
D511	8-719-071-50	DIODE BZA408B-115	
D512	8-719-072-68	DIODE PDZ13B-115	
D513	8-719-071-50	DIODE BZA408B-115	
D515	8-719-071-50	DIODE BZA408B-115	
D516	8-719-071-50	DIODE BZA408B-115	
D517	8-719-071-50	DIODE BZA408B-115 (SF99)	
D544	8-719-070-59	DIODE PDZ6.8B-115	
D570	8-719-070-59	DIODE PDZ6.8B-115	
D590	8-719-988-61	DIODE 1SS355TE-17	
D603	8-719-200-82	DIODE MPG06D-6052PKG3	
D604	8-719-070-56	DIODE PDZ5.1B-115	
D605	8-719-988-61	DIODE 1SS355TE-17	
D660	8-719-988-61	DIODE 1SS355TE-17	
D702	8-719-982-26	DIODE MTZJ-T-77-33	
D750	8-719-200-82	DIODE MPG06D-6052PKG3	
D800	8-719-988-61	DIODE 1SS355TE-17	
D890	8-719-070-59	DIODE PDZ6.8B-115 (SE85/SF90:UX,NP,B,VC)	
D891	8-719-070-59	DIODE PDZ6.8B-115 (SE85/SF90:UX,NP,B,VC)	
D892	8-719-070-59	DIODE PDZ6.8B-115 (SE85/SF90:UX,NP,B,VC)	
		< FILTER >	
FL500	1-236-163-11	ENCAPSULATED COMPONENT	
FL501	1-236-163-11	ENCAPSULATED COMPONENT	
FL502	1-236-163-11	ENCAPSULATED COMPONENT	
FL503	1-236-163-11	ENCAPSULATED COMPONENT	
FL504	1-236-163-11	ENCAPSULATED COMPONENT	
FL505	1-236-163-11	ENCAPSULATED COMPONENT	
FL506	1-236-163-11	ENCAPSULATED COMPONENT (SF99)	
FL507	1-236-163-11	ENCAPSULATED COMPONENT (SF99)	
FL570	1-236-163-11	ENCAPSULATED COMPONENT	
FL571	1-236-163-11	ENCAPSULATED COMPONENT	
FL572	1-236-163-11	ENCAPSULATED COMPONENT (EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)	
FL573	1-236-163-11	ENCAPSULATED COMPONENT (EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)	

Ref. No.	Part No.	Description	Remarks
		< IC >	
IC001	8-759-566-07	IC LA7277M-TLM	
IC100	8-759-702-02	IC NJM062M-TE2	
IC160	8-752-910-08	IC CXP88460-013Q	
IC161	8-759-481-46	IC LB1943	
IC200	8-759-547-32	IC LA71560M-MPB (SF99)	
IC200	8-759-638-64	IC LA71561M-MPB (SF90,SE85)	
IC360	8-759-486-63	IC TDA9615H/N1,518	
IC500	8-759-710-86	IC NJM2233BM(TE2) (SF99)	
IC601	8-759-438-18	IC PQ12RD08	
IC660	8-759-583-42	IC MB90089PF-G-230-BND-ER (SF99:EN)	
IC660	8-759-583-43	IC MB90089PF-G-223-BND-ER (SF99:UX,NP,B,VC)	
IC660	8-759-640-15	IC MB90089PF-G-229-BND-ER (SF90,SE85)	
IC661	8-759-164-09	IC LA7218M-TE-R	
IC850	8-759-484-61	IC SDA5650X-GEG	
		< JACK >	
J500	1-779-011-11	JACK, PIN 6P (SF99)	
J500	1-784-414-11	JACK, PIN 2P (SF90,SE85)	
J890	1-779-013-11	JACK, MINIATURE (SE85/SF99:UX,NP,B,VC)	
		< JUMPER RESISTOR >	
JR001	1-216-295-91	SHORT 0 (SF90/SF99)	
JR002	1-216-295-91	SHORT 0	
JR003	1-216-295-91	SHORT 0	
JR004	1-216-295-91	SHORT 0	
JR005	1-216-295-91	SHORT 0	
JR006	1-216-295-91	SHORT 0 (SF90/SF99)	
JR007	1-216-295-91	SHORT 0	
JR008	1-216-295-91	SHORT 0	
JR009	1-216-295-91	SHORT 0	
JR010	1-216-295-91	SHORT 0	
JR011	1-216-295-91	SHORT 0	
JR012	1-216-295-91	SHORT 0	
JR013	1-216-295-91	SHORT 0	
JR014	1-216-295-91	SHORT 0	
JR015	1-216-295-91	SHORT 0 (EXCEPT SF90:NP)	
JR016	1-216-295-91	SHORT 0 (EXCEPT SF90:NP)	
JR017	1-216-295-91	SHORT 0 (EXCEPT SF90:NP)	
JR018	1-216-295-91	SHORT 0 (EXCEPT SF90:NP)	
JR019	1-216-295-91	SHORT 0 (EXCEPT SF90:NP)	
JR020	1-216-295-91	SHORT 0 (EXCEPT SF90:NP)	
JR021	1-216-296-91	SHORT 0 (EXCEPT SF90:NP)	
JR022	1-216-295-91	SHORT 0 (EXCEPT SE85/SF99:NP)	
JR023	1-216-295-91	SHORT 0 (EXCEPT SE85/SF90:VC(SF)/SF99:NP)	
JR024	1-216-295-91	SHORT 0 (EXCEPT SE85/SF90:VC(SF)/SF99:NP)	
JR025	1-216-295-91	SHORT 0 (EXCEPT SF90:VC(SF)/SF99:NP)	
JR026	1-216-295-91	SHORT 0 (EXCEPT SF90:VC(SF)/SF99:NP)	
JR027	1-216-295-91	SHORT 0 (EXCEPT SF90:VC(SF)/SF99:NP)	
JR028	1-216-295-91	SHORT 0 (EXCEPT SF90:VC(SF)/SF99:NP)	
JR201	1-216-296-91	SHORT 0 (EXCEPT SF90:VC(SF)/SF99:NP)	
JR202	1-216-296-91	SHORT 0 (EXCEPT SF90:VC(SF)/SF99:NP)	

Ref. No.	Part No.	Description	Remarks
JR203	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR204	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR205	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR206	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR207	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR208	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR209	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR210	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR211	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR212	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR213	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR214	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR215	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR216	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR217	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR218	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR219	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR220	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR221	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR222	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR223	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR224	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR225	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR226	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR227	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR228	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR229	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR230	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR231	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR232	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR233	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR234	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR235	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR236	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR237	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR238	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR239	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR240	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR241	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR243	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR244	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR245	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR246	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR247	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR248	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR249	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR250	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR251	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR252	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF))
JR253	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF))
JR254	1-216-295-91	SHORT 0	(EXCEPT SF90:VC(SF))
JR255	1-216-295-91	SHORT 0	(EXCEPT SF90:VC(SF))
JR256	1-216-295-91	SHORT 0	(EXCEPT SF90:VC(SF))
JR257	1-216-295-91	SHORT 0	(EXCEPT SF90:VC(SF))
JR258	1-216-295-91	SHORT 0	(EXCEPT SF90:VC(SF))
JR259	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF))
JS200	1-216-295-91	SHORT 0	(SF99:UX,EN,NP,VC)
JS201	1-216-295-91	SHORT 0	(SF99:UX,EN,NP,VC)
JS204	1-216-295-91	SHORT 0	(SF99:B/SF90/SE85)
JS210	1-216-295-91	SHORT 0	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
JS211	1-216-295-91	SHORT 0	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
JS212	1-216-295-91	SHORT 0	(SF99:UX,EN,NP,VC)
JS213	1-216-295-91	SHORT 0	(SF90:B(WF),B(SF))
JS217	1-216-296-91	SHORT 0	(SF99:UX,EN,NP,VC)
JS218	1-216-295-91	SHORT 0	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
JS219	1-216-295-91	SHORT 0	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
JS220	1-216-295-91	SHORT 0	(SF99/B,SF90/SE85)
JS500	1-216-295-91	SHORT 0	(SF90/SE85)
JS591	1-216-295-91	SHORT 0	
JS605	1-216-296-91	SHORT 0	

Ref. No.	Part No.	Description	Remarks
JS705	1-216-295-91	SHORT 0	
JS805	1-216-295-91	SHORT 0	
		< COIL >	
L001	1-414-934-21	INDUCTOR 10uH	(SF99:UX,EN,NP,VC)
L161	1-414-934-21	INDUCTOR 10uH	
L163	1-414-934-21	INDUCTOR 10uH	
L200	1-414-946-21	INDUCTOR 39uH	
L201	1-414-940-21	INDUCTOR 100uH	
L202	1-414-934-21	INDUCTOR 10uH	
L203	1-414-934-21	INDUCTOR 10uH	
L204	1-414-934-21	INDUCTOR 10uH	
L205	1-414-934-21	INDUCTOR 10uH	
L206	1-414-938-21	INDUCTOR 47uH	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
L300	1-414-940-21	INDUCTOR 100uH	
L360	1-414-940-21	INDUCTOR 100uH	
L510	1-414-940-21	INDUCTOR 100uH	
L600	1-414-940-21	INDUCTOR 100uH	
L660	1-414-186-31	INDUCTOR 33uH	(SF99:EN,B/SF90:B(WF),B(SF)/SE85:B)
L662	1-414-940-21	INDUCTOR 100uH	
L663	1-414-940-21	INDUCTOR 100uH	
L664	1-412-470-21	INDUCTOR 22uH	
L701	1-414-930-21	INDUCTOR 2.2uH	
L750	1-414-930-21	INDUCTOR 2.2uH	
L755	1-414-940-21	INDUCTOR 100uH	
L890	1-408-970-21	INDUCTOR 10uH	(SF99:UX,NP,B,VC/SE85)
		< PHOTO INTERRUPTER >	
PH100	8-749-015-86	PHOTO INTERRUPTER GP3S120S	
PH101	8-749-015-86	PHOTO INTERRUPTER GP3S120S	(EXCEPT SF99:EN)
		< IC LINK >	
⚠PS601	1-801-552-21	PROTECTOR, MODUL	(EXCEPT SF99:EN)
⚠PS602	1-801-552-21	PROTECTOR, MODUL	(EXCEPT SF99:EN)
⚠PS603	1-801-552-21	PROTECTOR, MODUL	(EXCEPT SF99:EN)
		< TRANSISTOR >	
Q100	8-729-043-84	TRANSISTOR PT380F3	(EXCEPT SF99:EN)
Q101	8-729-043-84	TRANSISTOR PT380F3	(EXCEPT SF99:EN)
Q102	8-729-281-53	TRANSISTOR 2SC1815GR-TPE2	(EXCEPT SF99:EN)
Q103	8-729-043-29	TRANSISTOR PDTC144EK-115	(EXCEPT SF99:EN)
Q104	8-729-043-29	TRANSISTOR PDTC144EK-115	(EXCEPT SF99:EN)
Q105	8-729-230-49	TRANSISTOR 2SC2712Y-TE85L	(EXCEPT SF99:EN)
Q200	8-729-422-33	TRANSISTOR 2PD601AR-115	(EXCEPT SF99:EN)
Q201	8-729-422-33	TRANSISTOR 2PD601AR-115	(EXCEPT SF99:EN)
Q202	8-729-422-33	TRANSISTOR 2PD601AR-115	(EXCEPT SF99:EN)
Q203	8-729-216-22	TRANSISTOR 2PB709AR-115	(EXCEPT SF99:EN)
Q204	8-729-043-29	TRANSISTOR PDTC144EK-115	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
Q205	8-729-043-32	TRANSISTOR PDTA114EK-115	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
Q501	8-729-043-32	TRANSISTOR PDTA114EK-115	(EXCEPT SF99:EN)
Q502	8-729-043-29	TRANSISTOR PDTC144EK-115	(EXCEPT SF99:EN)
Q510	8-729-216-22	TRANSISTOR 2PB709AR-115	(EXCEPT SF90:UX(SF)/SF99:EN)
Q520	8-729-216-22	TRANSISTOR 2PB709AR-115	(SF99:UX,NP,B,VC)
Q540	8-729-216-22	TRANSISTOR 2PB709AR-115	(EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)
Q541	8-729-216-22	TRANSISTOR 2PB709AR-115	(EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)
Q590	8-729-422-33	TRANSISTOR 2PD601AR-115	(EXCEPT SF90:UX(SF)/SF99:EN)
Q591	8-729-422-33	TRANSISTOR 2PD601AR-115	(EXCEPT SF90:UX(SF)/SF99:EN)
Q592	8-729-216-22	TRANSISTOR 2PB709AR-115	(EXCEPT SF90:UX(SF)/SF99:EN)
Q607	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	(EXCEPT SF90:UX(SF)/SF99:EN)
Q608	8-729-043-29	TRANSISTOR PDTC144EK-115	(EXCEPT SF90:UX(SF)/SF99:EN)
Q609	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	(EXCEPT SF90:UX(SF)/SF99:EN)
Q610	8-729-043-29	TRANSISTOR PDTC144EK-115	(EXCEPT SF90:UX(SF)/SF99:EN)
Q611	8-729-216-22	TRANSISTOR 2PB709AR-115	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q612	8-729-043-29	TRANSISTOR PDTC144EK-115	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q613	8-729-106-68	TRANSISTOR 2SD1664-T100-R	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q660	8-729-043-29	TRANSISTOR PDTC144EK-115	(SF99:EN,B/SF90:B(WF),B(SF)/SE85:B)
Q661	8-729-422-33	TRANSISTOR 2PD601AR-115	(SF99:EN,B/SF90:B(WF),B(SF)/SE85:B)
Q662	8-729-216-22	TRANSISTOR 2PB709AR-115	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q663	8-729-216-22	TRANSISTOR 2PB709AR-115	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q664	8-729-216-22	TRANSISTOR 2PB709AR-115	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q751	8-729-043-29	TRANSISTOR PDTC144EK-115	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q752	8-729-216-22	TRANSISTOR 2PB709AR-115	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q780	8-729-043-29	TRANSISTOR PDTC144EK-115	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q781	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q800	8-729-216-22	TRANSISTOR 2PB709AR-115	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q801	8-729-422-33	TRANSISTOR 2PD601AR-115	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q802	8-729-422-33	TRANSISTOR 2PD601AR-115	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks
Q803	8-729-422-33	TRANSISTOR 2PD601AR-115	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q804	8-729-043-29	TRANSISTOR PDTC144EK-115	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q850	8-729-216-22	TRANSISTOR 2PB709AR-115	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
Q891	8-729-422-33	TRANSISTOR 2PD601AR-115	(SF99:UX,NP,B,VC/SE85)
Q892	8-729-140-75	TRANSISTOR 2SD999-T1CL	(SF99:UX,NP,B,VC/SE85)
Q893	8-729-422-33	TRANSISTOR 2PD601AR-115	(SF99:UX,NP,B,VC/SE85)
		< RESISTOR >	
R001	1-208-806-11	RES,CHIP 10K 0.50% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R002	1-216-049-91	RES,CHIP 1K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R003	1-216-049-91	RES,CHIP 1K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R004	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R005	1-216-049-91	RES,CHIP 1K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R006	1-216-041-00	METAL CHIP 470 5% 1/10W	(EXCEPT SE85/SF90:B(WF),UX(SF)/SF99:EN)
R100	1-249-400-11	CARBON 39 5% 1/4W F	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R101	1-249-400-11	CARBON 39 5% 1/4W F	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R102	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R103	1-216-085-00	METAL CHIP 33K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R104	1-216-085-00	METAL CHIP 33K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R105	1-249-413-11	CARBON 470 5% 1/4W F	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R106	1-216-077-91	RES,CHIP 15K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R107	1-216-077-91	RES,CHIP 15K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R109	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R110	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R111	1-216-103-00	METAL CHIP 180K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R112	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R113	1-208-806-11	RES,CHIP 10K 0.50% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R114	1-208-806-11	RES,CHIP 10K 0.50% 1/10W	(EXCEPT SF90:B(WF),UX(SF)/SF99:EN)
R119	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R120	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R130	1-216-085-00	METAL CHIP 33K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R131	1-216-085-00	METAL CHIP 33K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R133	1-216-073-00	METAL CHIP 10K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R134	1-216-089-91	RES,CHIP 47K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R135	1-216-073-00	METAL CHIP 10K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R136	1-216-073-00	METAL CHIP 10K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R160	1-216-073-00	METAL CHIP 10K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R161	1-216-073-00	METAL CHIP 10K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R162	1-216-089-91	RES,CHIP 47K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R163	1-216-073-00	METAL CHIP 10K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R164	1-216-089-91	RES,CHIP 47K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R165	1-216-041-00	METAL CHIP 470 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R166	1-216-041-00	METAL CHIP 470 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R167	1-216-049-91	RES,CHIP 1K 5% 1/10W	(EXCEPT SF90:B(WF),UX(SF))
R168	1-216-295-91	SHORT 0	(EXCEPT SF90:B(WF),UX(SF))
R169	1-216-295-91	SHORT 0	(EXCEPT SF90:B(WF),UX(SF))
R170	1-216-295-91	SHORT 0	(EXCEPT SF90:B(WF))
R171	1-216-295-91	SHORT 0	(EXCEPT SF90:B(WF))
R172	1-216-073-00	METAL CHIP 10K 5% 1/10W	(EXCEPT SF90:B(WF))
R173	1-216-073-00	METAL CHIP 10K 5% 1/10W	(EXCEPT SF90:B(WF))
R174	1-216-041-00	METAL CHIP 470 5% 1/10W	(EXCEPT SF90:B(WF))
R175	1-216-049-91	RES,CHIP 1K 5% 1/10W	(EXCEPT SF90:B(WF))
R176	1-216-073-00	METAL CHIP 10K 5% 1/10W	(EXCEPT SF90:B(WF))
R177	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(EXCEPT SF90:B(WF))
R178	1-216-295-91	SHORT 0	(EXCEPT SF90:B(WF))
R179	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	(SF99)
R181	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R182	1-216-017-91	RES,CHIP 47 5% 1/10W	
R183	1-216-041-00	METAL CHIP 470 5% 1/10W	
R184	1-216-041-00	METAL CHIP 470 5% 1/10W	
R200	1-216-073-00	METAL CHIP 10K 5% 1/10W	(EXCEPT SF90:B(WF))
R203	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	(EXCEPT SF90:B(WF))
R204	1-216-037-00	METAL CHIP 330 5% 1/10W	(EXCEPT SF90:B(WF))
R205	1-216-037-00	METAL CHIP 330 5% 1/10W	(EXCEPT SF90:B(WF))
R206	1-216-045-00	METAL CHIP 680 5% 1/10W	(EXCEPT SF90:B(WF))
R207	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	(EXCEPT SF90:B(WF))
R208	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	(EXCEPT SF90:B(WF))
R209	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	(EXCEPT SF90:B(WF))

Ref. No.	Part No.	Description	Remarks
R210	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	(EXCEPT SF90:B(WF))
R211	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	(EXCEPT SF90:B(WF))
R212	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	(EXCEPT SF90:B(WF))
R213	1-216-049-91	RES,CHIP 1K 5% 1/10W	(EXCEPT SF90:B(WF))
R214	1-216-049-91	RES,CHIP 1K 5% 1/10W	(EXCEPT SF90:B(WF))
R215	1-216-025-91	RES,CHIP 100 5% 1/10W	(EXCEPT SF90:B(WF))
R216	1-216-105-91	RES,CHIP 220K 5% 1/10W	(EXCEPT SF90:B(WF))
R217	1-216-025-91	RES,CHIP 100 5% 1/10W	(EXCEPT SF90:B(WF))
R218	1-216-025-91	RES,CHIP 100 5% 1/10W	(EXCEPT SF90:B(WF))
R219	1-216-025-91	RES,CHIP 100 5% 1/10W	(EXCEPT SF90:B(WF))
R220	1-216-045-00	METAL CHIP 680 5% 1/10W	(EXCEPT SF90:B(WF))
R221	1-216-017-91	RES,CHIP 47 5% 1/10W	(EXCEPT SF90:B(WF))
R222	1-216-017-91	RES,CHIP 47 5% 1/10W	(EXCEPT SF90:B(WF))
R223	1-216-017-91	RES,CHIP 47 5% 1/10W	(EXCEPT SF90:B(WF))
R224	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(EXCEPT SF90:B(WF))
R225	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	(EXCEPT SF90:B(WF))
R226	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	(EXCEPT SF90:B(WF))
R227	1-216-295-91	SHORT 0	(EXCEPT SF90:B(WF))
R228	1-216-295-91	SHORT 0	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R232	1-216-097-91	RES,CHIP 100K 5% 1/10W	(EXCEPT SF90:B(WF))
R250	1-216-077-91	RES,CHIP 15K 5% 1/10W	(EXCEPT SF90:B(WF))
R251	1-216-073-00	METAL CHIP 10K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R303	1-216-063-91	RES,CHIP 3.9K 5% 1/10W	(EXCEPT SF90:B(WF))
R305	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	(EXCEPT SF90:B(WF))
R306	1-216-053-00	METAL CHIP 1.5K 5% 1/10W	(EXCEPT SF90:B(WF))
R311	1-216-035-00	METAL CHIP 270 5% 1/10W	(EXCEPT SF90:B(WF))
R312	1-216-109-00	METAL CHIP 330K 5% 1/10W	(EXCEPT SF90:B(WF))
R313	1-216-047-91	RES,CHIP 820 5% 1/10W	(EXCEPT SF90:B(WF))
R314	1-216-073-00	METAL CHIP 10K 5% 1/10W	(EXCEPT SF90:B(WF))
R317	1-216-085-00	METAL CHIP 33K 5% 1/10W	(EXCEPT SF90:B(WF))

Ref. No.	Part No.	Description	Remarks
R318	1-216-075-00	METAL CHIP 12K 5% 1/10W	(EXCEPT SF90:B(WF))
R319	1-216-085-00	METAL CHIP 33K 5% 1/10W	(EXCEPT SF90:B(WF))
R320	1-216-129-00	METAL CHIP 2.2M 5% 1/10W	(EXCEPT SF90:B(WF))
R321	1-216-051-00	METAL CHIP 1.2K 5% 1/10W	(EXCEPT SF90:B(WF))
R322	1-216-079-00	METAL CHIP 18K 5% 1/10W	(EXCEPT SF90:B(WF))
R323	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	(EXCEPT SF90:B(WF))
R324	1-216-085-00	METAL CHIP 33K 5% 1/10W	(EXCEPT SF90:B(WF))
R327	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	(EXCEPT SF90:B(WF))
R328	1-216-093-91	RES,CHIP 68K 5% 1/10W	(EXCEPT SF90:B(WF))
R329	1-249-408-11	CARBON 180 5% 1/4W F	(EXCEPT SF90:B(WF))
R360	1-216-083-00	METAL CHIP 27K 5% 1/10W	(EXCEPT SF90:B(WF))
R361	1-216-073-00	METAL CHIP 10K 5% 1/10W	(EXCEPT SF90:B(WF))
R362	1-216-049-91	RES,CHIP 1K 5% 1/10W	(EXCEPT SF90:B(WF))
R363	1-216-049-91	RES,CHIP 1K 5% 1/10W	(EXCEPT SF90:B(WF))
R364	1-216-091-00	METAL CHIP 56K 5% 1/10W	(EXCEPT SF90:B(WF))
R365	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	(EXCEPT SF90:B(WF))
R366	1-216-025-91	RES,CHIP 100 5% 1/10W	(EXCEPT SF90:B(WF))
R367	1-216-025-91	RES,CHIP 100 5% 1/10W	(EXCEPT SF90:B(WF))
R368	1-216-079-00	METAL CHIP 18K 5% 1/10W	(EXCEPT SF90:B(WF))
R369	1-208-820-11	RES,CHIP 39K 0.50% 1/10W	(EXCEPT SF90:B(WF))
R370	1-216-079-00	METAL CHIP 18K 5% 1/10W	(EXCEPT SF90:B(WF))
R371	1-216-079-00	METAL CHIP 18K 5% 1/10W	(EXCEPT SF90:B(WF))
R372	1-216-079-00	METAL CHIP 18K 5% 1/10W	(EXCEPT SF90:B(WF))
R373	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	(EXCEPT SF90:B(WF))
R374	1-216-091-00	METAL CHIP 56K 5% 1/10W	(EXCEPT SF90:B(WF))
R375	1-216-133-00	METAL CHIP 3.3M 5% 1/10W	(EXCEPT SF90:B(WF))
R376	1-216-079-00	METAL CHIP 18K 5% 1/10W	(SF90:B(WF),VC(WF),NP(WF),B(SF),VC(SF),NP(SF)/SE85:B,NP,VC)
R376	1-216-295-91	SHORT 0	(SF99)
R377	1-216-079-00	METAL CHIP 18K 5% 1/10W	(SF90:B(WF),VC(WF),NP(WF),B(SF),VC(SF),NP(SF)/SE85:B,NP,VC)
R377	1-216-295-91	SHORT 0	(SF99)

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Ref. No.	Part No.	Description	Remarks
R500	1-216-041-00	METAL CHIP 470 5%	1/10W (EXCEPT SF90:B(WF))
R501	1-216-041-00	METAL CHIP 470 5%	1/10W (EXCEPT SF90:B(WF))
R502	1-216-025-91	RES,CHIP 100 5%	1/10W
R503	1-216-025-91	RES,CHIP 100 5%	1/10W
R504	1-216-295-91	SHORT 0 (SF99)	
R505	1-216-295-91	SHORT 0 (SF99)	
R506	1-216-041-00	METAL CHIP 470 5%	1/10W (SF99)
R507	1-216-041-00	METAL CHIP 470 5%	1/10W (SF99)
R509	1-216-069-00	METAL CHIP 6.8K 5%	1/10W
R510	1-249-408-11	CARBON 180 5%	1/4W F
R511	1-249-407-11	CARBON 150 5%	1/4W F
R512	1-216-021-00	METAL CHIP 68 5%	1/10W
R514	1-216-037-00	METAL CHIP 330 5%	1/10W
R515	1-216-049-91	RES,CHIP 1K 5%	1/10W
R516	1-216-065-91	RES,CHIP 4.7K 5%	1/10W
R517	1-216-022-00	METAL CHIP 75 5%	1/10W
R518	1-216-069-00	METAL CHIP 6.8K 5%	1/10W
R519	1-216-022-00	METAL CHIP 75 5%	1/10W (SF99)
R520	1-216-021-00	METAL CHIP 68 5%	1/10W (SF99)
R521	1-249-407-11	CARBON 150 5%	1/4W F (SF99)
R522	1-216-025-91	RES,CHIP 100 5%	1/10W (SF99)
R524	1-216-025-91	RES,CHIP 100 5%	1/10W (SF99)
R525	1-249-408-11	CARBON 180 5%	1/4W F (SF99)
R541	1-216-025-91	RES,CHIP 100 5%	1/10W (EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)
R542	1-249-407-11	CARBON 150 5%	1/4W F (EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)
R543	1-249-408-11	CARBON 180 5%	1/4W F (EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)
R545	1-216-085-00	METAL CHIP 33K 5%	1/10W
R546	1-216-089-91	RES,CHIP 47K 5%	1/10W
R547	1-216-049-91	RES,CHIP 1K 5%	1/10W (EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)
R548	1-216-022-00	METAL CHIP 75 5%	1/10W
R549	1-216-022-00	METAL CHIP 75 5%	1/10W (EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)
R570	1-216-041-00	METAL CHIP 470 5%	1/10W
R571	1-216-041-00	METAL CHIP 470 5%	1/10W
R572	1-216-025-91	RES,CHIP 100 5%	1/10W (EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)
R573	1-216-025-91	RES,CHIP 100 5%	1/10W (EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)
R574	1-216-097-91	RES,CHIP 100K 5%	1/10W (EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)
R575	1-216-097-91	RES,CHIP 100K 5%	1/10W (EXCEPT SE85:VX/SF90:UX(WF),UX(SF),EX/SF99:UX)
R660	1-216-073-00	METAL CHIP 10K 5%	1/10W (SF99:EN,B/SF90:B(WF),B(SF)/SE85:B)
R661	1-216-073-00	METAL CHIP 10K 5%	1/10W (SF99:EN,B/SF90:B(WF),B(SF)/SE85:B)
R590	1-216-049-91	RES,CHIP 1K 5%	1/10W
R591	1-216-049-91	RES,CHIP 1K 5%	1/10W
R592	1-216-049-91	RES,CHIP 1K 5%	1/10W
R597	1-216-025-91	RES,CHIP 100 5%	1/10W
R598	1-216-025-91	RES,CHIP 100 5%	1/10W
R611	1-216-049-91	RES,CHIP 1K 5%	1/10W
R615	1-216-049-91	RES,CHIP 1K 5%	1/10W
R616	1-216-049-91	RES,CHIP 1K 5%	1/10W
R617	1-249-417-11	CARBON 1K 5%	1/4W F
R619	1-249-417-11	CARBON 1K 5%	1/4W F
R620	1-216-089-91	RES,CHIP 47K 5%	1/10W
R621	1-216-081-00	METAL CHIP 22K 5%	1/10W
R662	1-216-059-00	METAL CHIP 2.7K 5%	1/10W
R663	1-216-053-00	METAL CHIP 1.5K 5%	1/10W
R664	1-216-081-00	METAL CHIP 22K 5%	1/10W
R665	1-216-041-00	METAL CHIP 470 5%	1/10W
R666	1-216-041-00	METAL CHIP 470 5%	1/10W
R667	1-216-081-00	METAL CHIP 22K 5%	1/10W
R669	1-216-033-00	METAL CHIP 220 5%	1/10W
R670	1-216-041-00	METAL CHIP 470 5%	1/10W
R671	1-249-407-11	CARBON 150 5%	1/4W F
R674	1-216-073-00	METAL CHIP 10K 5%	1/10W
R675	1-216-063-91	RES,CHIP 3.9K 5%	1/10W
R676	1-216-043-91	RES,CHIP 560 5%	1/10W
R677	1-216-101-00	METAL CHIP 150K 5%	1/10W
R678	1-216-049-91	RES,CHIP 1K 5%	1/10W
R679	1-216-069-00	METAL CHIP 6.8K 5%	1/10W
R702	1-216-295-91	SHORT 0	
R704	1-216-041-00	METAL CHIP 470 5%	1/10W
R705	1-216-041-00	METAL CHIP 470 5%	1/10W
R706	1-216-025-91	RES,CHIP 100 5%	1/10W
R707	1-216-057-00	METAL CHIP 2.2K 5%	1/10W
R708	1-216-049-91	RES,CHIP 1K 5%	1/10W
R709	1-216-049-91	RES,CHIP 1K 5%	1/10W
⚠R711	1-212-893-00	FUSIBLE 330 5%	1/4W F
R713	1-216-025-91	RES,CHIP 100 5%	1/10W
R714	1-216-113-00	METAL CHIP 470K 5%	1/10W
R719	1-216-073-00	METAL CHIP 10K 5%	1/10W (SF90:UX(WF),VC(WF),NP(WF),UX(SF), B(SF),VC(SF),NP(SF),EX/SE85)
R731	1-216-041-00	METAL CHIP 470 5%	1/10W
R733	1-216-041-00	METAL CHIP 470 5%	1/10W
R756	1-216-073-00	METAL CHIP 10K 5%	1/10W
R757	1-216-049-91	RES,CHIP 1K 5%	1/10W
R759	1-216-037-00	METAL CHIP 330 5%	1/10W
R800	1-216-101-00	METAL CHIP 150K 5%	1/10W
R801	1-216-073-00	METAL CHIP 10K 5%	1/10W
R802	1-216-073-00	METAL CHIP 10K 5%	1/10W
R803	1-216-081-00	METAL CHIP 22K 5%	1/10W
R804	1-216-073-00	METAL CHIP 10K 5%	1/10W
R805	1-216-073-00	METAL CHIP 10K 5%	1/10W
R806	1-216-073-00	METAL CHIP 10K 5%	1/10W
R807	1-216-085-00	METAL CHIP 33K 5%	1/10W
R808	1-216-089-91	RES,CHIP 47K 5%	1/10W
R813	1-216-073-00	METAL CHIP 10K 5%	1/10W
R850	1-247-807-31	CARBON 100 5%	1/4W
R851	1-216-079-00	METAL CHIP 18K 5%	1/10W
R852	1-216-083-00	METAL CHIP 27K 5%	1/10W

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remarks
R853	1-216-049-91	RES,CHIP	1K	5%	1/10W
R856	1-216-097-91	RES,CHIP	100K	5%	1/10W
R857	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R858	1-216-069-00	METAL CHIP	6.8K	5%	1/10W
R859	1-216-123-11	METAL CHIP	1.2M	5%	1/10W
R860	1-216-123-11	METAL CHIP	1.2M	5%	1/10W
R861	1-216-117-00	METAL CHIP	680K	5%	1/10W
R862	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R890	1-216-065-91	RES,CHIP	4.7K	5%	1/10W (SF99:UX,NP,B,VC/SE85)
R891	1-216-105-91	RES,CHIP	220K	5%	1/10W (SF99:UX,NP,B,VC/SE85)
R892	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (SF99:UX,NP,B,VC/SE85)
R893	1-216-049-91	RES,CHIP	1K	5%	1/10W (SF99:UX,NP,B,VC/SE85)
R894	1-216-049-91	RES,CHIP	1K	5%	1/10W (SF99:UX,NP,B,VC/SE85)
R896	1-216-001-00	METAL CHIP	10	5%	1/10W (SF99:UX,NP,B,VC/SE85)
		< SWITCH >			
S100	1-771-155-11	SWITCH, ROTARY			
S101	1-762-108-11	SWITCH, PUSH (1 KEY)			
S160	1-571-588-31	SWITCH, SLIDE			
		< TUNER >			
TU702	1-693-436-11	TUNER, IF (BTF-3WC428)			(SF99:EN,NP/SF90:NP(WF),NP(SF),EX/SE85:NP)
TU702	1-693-437-11	TUNER, IF (BTF-3WU604)			(SF99:UX/SF90:UX(WF),UX(SF)/SE85:UX)
TU702	1-693-438-11	TUNER, IF (BTF-3WC446)			(SF99:B/SF90:B(WF),B(SF)/SE85:B)
TU702	1-693-439-11	TUNER, IF (BTF-3WC429)			(SF99:VC/SF90:VC(WF),VC(SF)/SE85:VC)
		< VIBRATOR >			
X160	1-760-494-31	VIBRATOR, CRYSTAL			
X200	1-579-608-21	VIBRATOR, CRYSTAL			
X660	1-577-289-61	VIBRATOR, CRYSTAL			
X661	1-577-165-11	VIBLATOR, CERAMIC			

*	A-6713-519-A	ML-17 COMPLETE BOARD, COMPLETE	(SF99:B/SF90:B(WF),B(SF))
		***	
*	A-6713-520-A	ML-17 COMPLETE BOARD, COMPLETE	(SF99:EN)
		***	
*	A-6791-915-A	ML-17 COMPLETE BOARD, COMPLETE(EXCEPT SE85/SF90:B(WF).B(SF)/SF99:B.EN)	
		***	
			(Ref.No.:2000 Series)

Ref. No.	Part No.	Description			Remarks
		< CAPACITOR >			
C902	1-163-251-11	CERAMIC CHIP	100PF	5%	50V (SF90/SF99)
C903	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (SF90/SF99)
C904	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (SF90/SF99)
C906	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (SF90/SF99)
C907	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (SF90/SF99)
C908	1-163-251-11	CERAMIC CHIP	100PF	5%	50V (SF90/SF99)
C909	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (SF90/SF99)
C910	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (SF90/SF99)
C911	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (SF90/SF99)
C912	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (SF90/SF99)
C913	1-163-249-11	CERAMIC CHIP	82PF	5%	50V (SF90/SF99)
C914	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (SF90/SF99)
C915	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (SF90/SF99)
C916	1-163-251-11	CERAMIC CHIP	100PF	5%	50V (SF90/SF99)
C917	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (SF90/SF99)
C919	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (SF90/SF99)
C920	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (SF90/SF99)
C921	1-128-131-11	ELECT	22uF	20%	50V (SF90/SF99)
C923	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (SF90/SF99)
C924	1-124-589-11	ELECT	47uF	20%	16V (SF90/SF99)
C925	1-163-249-11	CERAMIC CHIP	82PF	5%	50V (SF90/SF99)
C928	1-128-131-11	ELECT	22uF	20%	50V (SF90/SF99)
C929	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (SF90/SF99)
C930	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (SF90/SF99)
C931	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (SF90/SF99)
C932	1-128-057-11	ELECT	330uF	20%	6.3V (SF90/SF99)
C933	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (SF90/SF99)
C934	1-163-237-11	CERAMIC CHIP	27PF	5%	50V (SF90/SF99)
C935	1-163-237-11	CERAMIC CHIP	27PF	5%	50V (SF90/SF99)
C940	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (SF90/SF99)

Ref. No.	Part No.	Description			Remarks
C941	1-128-131-11	ELECT	22uF	20%	50V (SF90/SF99)
C942	1-128-131-11	ELECT	22uF	20%	50V (SF90/SF99)
C943	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (SF90/SF99)
C944	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (SF90/SF99)
C945	1-128-131-11	ELECT	22uF	20%	50V (SF90/SF99)
C950	1-163-121-00	CERAMIC CHIP	150PF	5%	50V (SF90/SF99)
C951	1-124-584-00	ELECT	100uF	20%	10V (SF90/SF99)
C952	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V (SF90/SF99)
C953	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V (SF90/SF99)
C954	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V (SF90/SF99)
C955	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V (SF90/SF99)
C956	1-163-989-11	CERAMIC CHIP	0.033uF	10%	25V (SF90/SF99)
C957	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V (SF90/SF99)
C959	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V (SF90/SF99)
C960	1-163-237-11	CERAMIC CHIP	27PF	5%	50V (SF90/SF99)
C961	1-163-237-11	CERAMIC CHIP	27PF	5%	50V (SF90/SF99)
C962	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V (SF90/SF99)
C963	1-124-584-00	ELECT	100uF	20%	10V (SF90/SF99)
C964	1-107-725-11	CERAMIC CHIP	0.1uF	10%	16V (SF90/SF99)
C980	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (SF90/SF99)
C981	1-124-589-11	ELECT	47uF	20%	16V (SF90/SF99)
C984	1-124-589-11	ELECT	47uF	20%	16V (SF90/SF99)
		< CONNECTOR >			
* CN900	1-568-941-11	PIN, CONNECTOR 3P (SF90/SF99)			
* CN901	1-568-941-11	PIN, CONNECTOR 3P (SF90/SF99)			
CN950	1-784-494-11	CONNECTOR, FFC/FPC 15P (SF90/SF99)			
		< DIODE >			
D900	8-719-911-19	DIODE 1SS119-25TD (SF90/SF99)			
D901	8-719-911-19	DIODE 1SS119-25TD (SF90/SF99)			
D902	8-719-911-19	DIODE 1SS119-25TD (SF90/SF99)			
D903	8-719-911-19	DIODE 1SS119-25TD (SF90/SF99)			
D904	8-719-200-82	DIODE MPG06D-6052PKG3 (SF90/SF99)			
D905	8-719-911-19	DIODE 1SS119-25TD (SF90/SF99)			
D907	8-719-911-19	DIODE 1SS119-25TD (SF90/SF99)			

Ref. No.	Part No.	Description		Remarks
		< FERRITE BEAD >		
FB900	1-414-233-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB901	1-414-233-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB902	1-414-233-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB903	1-414-233-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB904	1-414-234-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB905	1-414-234-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB906	1-414-234-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB907	1-414-234-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB908	1-414-233-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB909	1-414-235-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB910	1-414-235-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB911	1-414-235-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB912	1-414-235-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB950	1-414-233-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB951	1-414-233-22	INDUCTOR CHIP	0UH (SF90/SF99)	
FB952	1-414-233-22	INDUCTOR CHIP	0UH (SF90/SF99)	
		< IC >		
IC900	8-759-100-93	IC uPC393G2-E2 (SF90/SF99)		
IC901	8-759-587-89	IC CXD8753AQ		(EXCEPT SE85/SF90:B(WF),B(SF)/SF99:B.EN)
IC902	8-752-902-96	IC CXP84632-042Q		(SF99:B/SF90:B(WF),B(SF))
IC902	8-752-907-89	IC CXP84632-061Q		(EXCEPT SE85/SF90:B(WF),B(SF)/SF99:B.EN)
IC902	8-752-909-50	IC CXP84632-060Q (SF99:EN)		
IC903	8-759-527-75	IC M24C04-MN6T (SF90/SF99)		
IC950	8-759-376-75	IC SDA5250M-C5-GEG (SF90/SF99)		
IC951	8-759-577-63	IC MX23C4000PC-12-TET11 (SF90/SF99)		
		< JUMPER RESISTOR >		
JR001	1-216-295-91	SHORT	0	
JR002	1-216-296-91	SHORT	0 (SF90/SF99)	
JR003	1-216-296-91	SHORT	0 (SF90/SF99)	
JR004	1-216-296-91	SHORT	0 (SF90/SF99)	
JR005	1-216-296-91	SHORT	0 (SF90/SF99)	
JR006	1-216-295-91	SHORT	0	
JR007	1-216-296-91	SHORT	0 (SF90/SF99)	
JR008	1-216-296-91	SHORT	0 (SF90/SF99)	
JR009	1-216-296-91	SHORT	0 (SF90/SF99)	
JR011	1-216-296-91	SHORT	0 (SF90/SF99)	
JR012	1-216-296-91	SHORT	0 (SF90/SF99)	
JR022	1-216-295-91	SHORT	0 (EXCEPT SF99:NP)	
JR023	1-216-295-91	SHORT	0	(EXCEPT SF90:VC(SF)/SF99:NP)
JR024	1-216-295-91	SHORT	0	(EXCEPT SF90:VC(SF)/SF99:NP)
JS954	1-216-295-91	SHORT	0 (SF90/SF99)	
		< COIL >		
L900	1-414-934-21	INDUCTOR	10uH (SF90/SF99)	
L901	1-414-934-21	INDUCTOR	10uH (SF90/SF99)	
L902	1-414-934-21	INDUCTOR	10uH (SF90/SF99)	
L903	1-414-934-21	INDUCTOR	10uH (SF90/SF99)	
L904	1-414-940-21	INDUCTOR	100uH (SF90/SF99)	

Ref. No.	Part No.	Description			Remarks
L905	1-414-936-21	INDUCTOR	22uH (SF90/SF99)		
L907	1-414-936-21	INDUCTOR	22uH (SF90/SF99)		
L912	1-414-936-21	INDUCTOR	22uH (SF90/SF99)		
L950	1-414-934-21	INDUCTOR	10uH (SF90/SF99)		
L961	1-414-940-21	INDUCTOR	100uH (SF90/SF99)		
		< IC LINK >			
PS901	1-801-553-21	PROTECTOR, MODUL (SF90/SF99)			
PS950	1-576-319-21	PROTECTOR, MODULE (SF90/SF99)			
		< TRANSISTOR >			
Q900	8-729-216-22	TRANSISTOR	2PB709AR-115 (SF90/SF99)		
Q901	8-729-044-60	TRANSISTOR	2SC3383-T-AA (SF90/SF99)		
Q902	8-729-044-60	TRANSISTOR	2SC3383-T-AA (SF90/SF99)		
Q903	8-729-421-19	TRANSISTOR	MUN2213T1 (SF90/SF99)		
Q904	8-729-422-33	TRANSISTOR	2PD601AR-115 (SF90/SF99)		
Q905	8-729-422-33	TRANSISTOR	2PD601AR-115 (SF90/SF99)		
Q906	8-729-216-22	TRANSISTOR	2PB709AR-115 (SF90/SF99)		
Q907	8-729-216-22	TRANSISTOR	2PB709AR-115 (SF90/SF99)		
Q908	8-729-422-33	TRANSISTOR	2PD601AR-115 (SF90/SF99)		
Q909	8-729-422-33	TRANSISTOR	2PD601AR-115 (SF90/SF99)		
Q910	8-729-421-19	TRANSISTOR	MUN2213T1 (SF90/SF99)		
Q911	8-729-044-60	TRANSISTOR	2SC3383-T-AA (SF90/SF99)		
Q912	8-729-421-19	TRANSISTOR	MUN2213T1 (SF90/SF99)		
Q913	8-729-044-60	TRANSISTOR	2SC3383-T-AA (SF90/SF99)		
Q914	8-729-421-19	TRANSISTOR	MUN2213T1 (SF90/SF99)		
Q915	8-729-216-22	TRANSISTOR	2PB709AR-115 (SF90/SF99)		
Q916	8-729-804-41	TRANSISTOR	2SB1122-ST-TD (SF90/SF99)		
Q917	8-729-421-19	TRANSISTOR	MUN2213T1 (SF90/SF99)		
		< RESISTOR >			
R001	1-216-041-00	METAL CHIP	470	5%	1/10W (EXCEPT SE85/SF90:B(WF),NP(WF),UX(SF)/SF99:EN)
R002	1-216-041-00	METAL CHIP	470	5%	1/10W (EXCEPT SE85/SF90:B(WF),NP(WF),UX(SF)/SF99:EN)
R003	1-249-413-11	CARBON	470	5%	1/4W F (EXCEPT SE85/SF90:B(WF),NP(WF),UX(SF)/SF99:EN)
R004	1-249-413-11	CARBON	470	5%	1/4W F (EXCEPT SE85/SF90:B(WF),NP(WF),UX(SF)/SF99:EN)
R005	1-249-413-11	CARBON	470	5%	1/4W F (EXCEPT SE85/SF90:B(WF),NP(WF),UX(SF)/SF99:EN)
R006	1-216-041-00	METAL CHIP	470	5%	1/10W (EXCEPT SF90:B(WF),UX(SF)/SF90:EN)
R007	1-216-041-00	METAL CHIP	470	5%	1/10W (SF90/SF99)
R008	1-216-073-00	METAL CHIP	10K	5%	1/10W (SF90/SF99)
R009	1-216-073-00	METAL CHIP	10K	5%	1/10W (SF90/SF99)
R900	1-216-045-00	METAL CHIP	680	5%	1/10W (SF90/SF99)
R902	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (SF90/SF99)
R903	1-216-025-91	RES,CHIP	100	5%	1/10W (SF90/SF99)
R905	1-216-049-91	RES,CHIP	1K	5%	1/10W (SF90/SF99)
R907	1-249-402-11	CARBON	56	5%	1/4W F (SF90/SF99)
R908	1-216-049-91	RES,CHIP	1K	5%	1/10W (SF90/SF99)
R909	1-216-049-91	RES,CHIP	1K	5%	1/10W (SF90/SF99)
R910	1-249-398-11	CARBON	27	5%	1/4W F (SF90/SF99)
R911	1-216-065-91	RES,CHIP	4.7K	5%	1/10W (SF90/SF99)
R912	1-216-049-91	RES,CHIP	1K	5%	1/10W (SF90/SF99)
R914	1-216-295-91	SHORT	0 (SF90/SF99)		
R915	1-216-065-91	RES,CHIP	4.7K	5%	1/10W (SF90/SF99)
R916	1-216-025-91	RES,CHIP	100	5%	1/10W (SF90/SF99)
R918	1-216-065-91	RES,CHIP	4.7K	5%	1/10W (SF90/SF99)
R919	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (SF90/SF99)
R921	1-216-065-91	RES,CHIP	4.7K	5%	1/10W (SF90/SF99)
R922	1-216-045-00	METAL CHIP	680	5%	1/10W (SF90/SF99)
R923	1-216-025-91	RES,CHIP	100	5%	1/10W (SF90/SF99)
R924	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (SF90/SF99)
R925	1-216-045-00	METAL CHIP	680	5%	1/10W (SF90/SF99)
R927	1-216-089-91	RES,CHIP	47K	5%	1/10W (SF90/SF99)
R928	1-216-081-00	METAL CHIP	22K	5%	1/10W (SF90/SF99)
R929	1-216-025-91	RES,CHIP	100	5%	1/10W (SF90/SF99)
R930	1-216-089-91	RES,CHIP	47K	5%	1/10W (SF90/SF99)
R931	1-216-081-00	METAL CHIP	22K	5%	1/10W (SF90/SF99)
R932	1-216-025-91	RES,CHIP	100	5%	1/10W (SF90/SF99)
R933	1-216-049-91	RES,CHIP	1K	5%	1/10W (SF90/SF99)
R934	1-216-017-91	RES,CHIP	47	5%	1/10W (SF90/SF99)
R935	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (SF90/SF99)
R936	1-216-049-91	RES,CHIP	1K	5%	1/10W (SF90/SF99)
R938	1-216-017-91	RES,CHIP	47	5%	1/10W (SF90/SF99)
R939	1-249-402-11	CARBON	56	5%	1/4W F (SF90/SF99)
R941	1-249-398-11	CARBON	27	5%	1/4W F (SF90/SF99)
R942	1-216-065-91	RES,CHIP	4.7K	5%	1/10W (SF90/SF99)
R943	1-216-063-91	RES,CHIP	3.9K	5%	1/10W (SF90/SF99)
R944	1-216-065-91	RES,CHIP	4.7K	5%	1/10W (SF90/SF99)

Ref. No.	Part No.	Description				Remarks
R946	1-216-295-91	SHORT	0 (SF90/SF99)			
R947	1-216-063-91	RES,CHIP	3.9K	5%	1/10W	(SF90/SF99)
R948	1-216-065-91	RES,CHIP	4.7K	5%	1/10W	(SF90/SF99)
R949	1-216-025-91	RES,CHIP	100	5%	1/10W	(SF90/SF99)
R951	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	(SF90/SF99)
R952	1-216-057-00	METAL CHIP	2.2K	5%	1/10W	(SF90/SF99)
R953	1-216-071-00	METAL CHIP	8.2K	5%	1/10W	(SF90/SF99)
R954	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	(SF90/SF99)
R955	1-216-069-00	METAL CHIP	6.8K	5%	1/10W	(SF90/SF99)
R956	1-216-095-00	METAL CHIP	82K	5%	1/10W	(SF90/SF99)
R957	1-216-113-00	METAL CHIP	470K	5%	1/10W	(SF90/SF99)
R958	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	(SF90/SF99)
R959	1-216-053-00	METAL CHIP	1.5K	5%	1/10W	(SF90/SF99)
R962	1-216-295-91	SHORT	0 (SF90/SF99)			
R965	1-216-295-91	SHORT	0 (SF90/SF99)			
R967	1-216-295-91	SHORT	0 (SF90/SF99)			
R969	1-216-045-00	METAL CHIP	680	5%	1/10W	(SF90/SF99)
R970	1-216-121-91	RES,CHIP	1M	5%	1/10W	(SF90/SF99)
R972	1-216-049-91	RES,CHIP	1K	5%	1/10W	(SF90/SF99)
R973	1-216-049-91	RES,CHIP	1K	5%	1/10W	(SF90/SF99)
R974	1-216-295-91	SHORT	0 (SF90/SF99)			
R975	1-216-295-91	SHORT	0 (SE85:B/SF90/SF99)			
R976	1-216-295-91	SHORT	0 (SF90/SF99)			
R977	1-216-089-91	RES,CHIP	47K	5%	1/10W	(SE85:B/SF90/SF99)
R978	1-216-089-91	RES,CHIP	47K	5%	1/10W	(SF90/SF99)
R979	1-216-043-91	RES,CHIP	560	5%	1/10W	(SF90/SF99)
R981	1-216-295-91	SHORT	0 (SF90/SF99)			
R983	1-216-295-91	SHORT	0 (SF90/SF99)			
R984	1-216-295-91	SHORT	0 (SF90/SF99)			
R985	1-216-295-91	SHORT	0 (SF90/SF99)			
R986	1-216-041-00	METAL CHIP	470	5%	1/10W	(SF90/SF99)
R987	1-216-041-00	METAL CHIP	470	5%	1/10W	(SF90/SF99)
R988	1-216-041-00	METAL CHIP	470	5%	1/10W	(SF90/SF99)
R989	1-216-041-00	METAL CHIP	470	5%	1/10W	(SF90/SF99)
R993	1-216-073-00	METAL CHIP	10K	5%	1/10W	(SF90/SF99)

Ref. No.	Part No.	Description				Remarks
R998	1-216-295-91	SHORT	0 (SF90/SF99)			
R999	1-216-073-00	METAL CHIP	10K	5%	1/10W	(SF90/SF99)
		< VIBRATOR >				
X900	1-767-914-21	VIBRATOR, CRYSTAL(13.56MHz) (SF90/SF99)				
X901	1-760-995-21	VIBRATOR, CERAMIC(16MHz) (SF90/SF99)				
X950	1-781-039-21	VIBRATOR, CRYSTAL(18MHz) (SF90/SF99)				

Ref. No.	Part No.	Description				Remarks
*	A-6791-959-A	NR-27 COMPLETE BOARD, COMPLETE (SF99:UX,EN,NP,VC) ** (Ref.No.:2000 Series)				
		< CAPACITOR >				
C001	1-164-346-11	CERAMIC CHIP	1uF		16V	
C002	1-124-584-00	ELECT	100uF	20%	10V	
C003	1-124-589-11	ELECT	47uF	20%	16V	
C004	1-164-346-11	CERAMIC CHIP	1uF		16V	
C005	1-124-465-00	ELECT	0.47uF	20%	50V	
C006	1-124-465-00	ELECT	0.47uF	20%	50V	
C007	1-124-589-11	ELECT	47uF	20%	16V	
C008	1-124-589-11	ELECT	47uF	20%	16V	
C010	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C012	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C014	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C015	1-164-346-11	CERAMIC CHIP	1uF		16V	
C016	1-124-465-00	ELECT	0.47uF	20%	50V	
C017	1-163-251-11	CERAMIC CHIP	100PF	5%	50V	
C018	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C020	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C021	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V	
C022	1-126-157-11	ELECT	10uF	20%	16V	
C023	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C024	1-124-257-00	ELECT	2.2uF	20%	50V	
C025	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C026	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C027	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C028	1-124-589-11	ELECT	47uF	20%	16V	
C029	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C030	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C031	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C032	1-124-589-11	ELECT	47uF	20%	16V	
C033	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C034	1-109-982-11	CERAMIC CHIP	1uF	10%	10V	
C036	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C037	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C038	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C040	1-163-038-91	CERAMIC CHIP	0.1uF		25V	
C041	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C042	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C045	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C046	1-163-251-11	CERAMIC CHIP	100PF	5%	50V	
C047	1-163-031-11	CERAMIC CHIP	0.01uF		50V	
C048	1-163-031-11	CERAMIC CHIP	0.01uF		50V	

Ref. No.	Part No.	Description			Remarks
		< CONNECTOR >			
CN001	1-573-825-11	CONNECTOR, BOARD TO BOARD 11P			
		< FILTER >			
FL001	1-234-083-11	FILTER, LOW PASS			
FL002	1-234-084-11	FILTER, BAND PASS			
		< IC >			
IC001	8-759-431-14	IC PQ3TZ53U			
IC002	8-759-583-41	IC MM1116XFBE			
IC003	8-759-493-00	IC LC74391E			
IC004	8-759-432-78	IC MM1111XFBE			
		< COIL >			
L001	1-414-934-21	INDUCTOR	10uH		
L002	1-414-934-21	INDUCTOR	10uH		
L003	1-414-934-21	INDUCTOR	10uH		
L004	1-414-936-21	INDUCTOR	22uH		
		< TRANSISTOR >			
Q001	8-729-216-22	TRANSISTOR	2PB709AR-115		
Q002	8-729-422-33	TRANSISTOR	2PD601AR-115		
Q003	8-729-216-22	TRANSISTOR	2PB709AR-115		
Q004	8-729-422-33	TRANSISTOR	2PD601AR-115		
Q005	8-729-216-22	TRANSISTOR	2PB709AR-115		
Q006	8-729-422-33	TRANSISTOR	2PD601AR-115		
Q007	8-729-422-33	TRANSISTOR	2PD601AR-115		
Q008	8-729-216-22	TRANSISTOR	2PB709AR-115		
Q009	8-729-422-33	TRANSISTOR	2PD601AR-115		
Q010	8-729-216-22	TRANSISTOR	2PB709AR-115		
Q011	8-729-216-22	TRANSISTOR	2PB709AR-115		
Q012	8-729-216-22	TRANSISTOR	2PB709AR-115		
Q013	8-729-216-22	TRANSISTOR	2PB709AR-115		
		< RESISTOR >			
R002	1-216-081-00	METAL CHIP	22K	5%	1/10W
R003	1-216-073-00	METAL CHIP	10K	5%	1/10W
R004	1-216-041-00	METAL CHIP	470	5%	1/10W (SF99:UX,NP,VC)
R005	1-216-021-00	METAL CHIP	68	5%	1/10W
R006	1-216-049-91	RES,CHIP	1K	5%	1/10W (SF99:UX,NP,VC)
R007	1-216-049-91	RES,CHIP	1K	5%	1/10W
R008	1-216-049-91	RES,CHIP	1K	5%	1/10W
R010	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R011	1-216-017-91	RES,CHIP	47	5%	1/10W
R012	1-216-041-00	METAL CHIP	470	5%	1/10W
R013	1-216-031-00	METAL CHIP	180	5%	1/10W
R014	1-216-037-00	METAL CHIP	330	5%	1/10W
R015	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R016	1-216-041-00	METAL CHIP	470	5%	1/10W
R017	1-216-041-00	METAL CHIP	470	5%	1/10W
R018	1-216-047-91	RES,CHIP	820	5%	1/10W
R019	1-216-081-00	METAL CHIP	22K	5%	1/10W
R020	1-216-075-00	METAL CHIP	12K	5%	1/10W
R021	1-216-049-91	RES,CHIP	1K	5%	1/10W
R022	1-216-049-91	RES,CHIP	1K	5%	1/10W
R023	1-216-097-91	RES,CHIP	100K	5%	1/10W
R024	1-216-025-91	RES,CHIP	100	5%	1/10W
R025	1-216-049-91	RES,CHIP	1K	5%	1/10W
R027	1-216-295-91	SHORT	0		
R029	1-216-049-91	RES,CHIP	1K	5%	1/10W
R030	1-216-040-00	RES,CHIP	430	5%	1/10W
R031	1-216-041-00	METAL CHIP	470	5%	1/10W
R032	1-216-049-91	RES,CHIP	1K	5%	1/10W
R033	1-216-041-00	METAL CHIP	470	5%	1/10W
R034	1-216-295-91	SHORT	0		
R035	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R036	1-216-121-91	RES,CHIP	1M	5%	1/10W
R037	1-216-052-00	METAL CHIP	1.3K	5%	1/10W
R038	1-216-078-00	RES,CHIP	16K	5%	1/10W
R041	1-216-067-00	METAL CHIP	5.6K	5%	1/10W
R042	1-216-081-00	METAL CHIP	22K	5%	1/10W
R043	1-216-021-00	METAL CHIP	68	5%	1/10W
R044	1-216-041-00	METAL CHIP	470	5%	1/10W
R045	1-216-061-00	METAL CHIP	3.3K	5%	1/10W
R046	1-216-049-91	RES,CHIP	1K	5%	1/10W
R047	1-216-075-00	METAL CHIP	12K	5%	1/10W
R048	1-216-041-00	METAL CHIP	470	5%	1/10W
		< VARIABLE RESISTOR >			
RV001	1-241-763-11	RES, ADJ, CERMET 4.7K			
RV002	1-241-763-11	RES, ADJ, CERMET 4.7K			

Ref. No.	Part No.	Description			Remarks
*	A-6791-914-A	RP-235 COMPLETE BOARD, COMPLETE (SF90) **************************************			
*	A-6791-925-A	RP-235 COMPLETE BOARD, COMPLETE (SE85) **************************************			
*	A-6791-971-A	RP-235 COMPLETE BOARD, COMPLETE (SF99) **************************************			
					(Ref.No:3000 Series)
		< CAPACITOR >			
C266	1-163-031-11	CERAMIC CHIP	0.01uF		50V
C271	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C272	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C275	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C276	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C278	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C279	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C280	1-124-584-00	ELECT	100uF	20%	10V
C281	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C282	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C283	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V
C284	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C285	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (SF90/SF99)
C288	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (SF90/SF99)
C289	1-163-239-11	CERAMIC CHIP	33PF	5%	50V (SF90/SF99)

Ref. No.	Part No.	Description	Remarks
C290	1-163-021-91	CERAMIC CHIP 0.01uF 10% 50V	(SF90/SF99)
C291	1-163-021-91	CERAMIC CHIP 0.01uF 10% 50V	(SF90/SF99)
C292	1-163-021-91	CERAMIC CHIP 0.01uF 10% 50V	(SF90/SF99)
C293	1-124-257-00	ELECT 2.2uF 20% 50V	(SF90/SF99)
C294	1-163-021-91	CERAMIC CHIP 0.01uF 10% 50V	(SF90/SF99)
C295	1-163-021-91	CERAMIC CHIP 0.01uF 10% 50V	(SF90/SF99)
C296	1-124-589-11	ELECT 47uF 20% 16V	(SF90/SF99)
C321	1-124-589-11	ELECT 47uF 20% 16V	
C322	1-163-021-91	CERAMIC CHIP 0.01uF 10% 50V	
C323	1-163-021-91	CERAMIC CHIP 0.01uF 10% 50V	
C324	1-104-697-11	FILM 0.047uF 5% 100V	(SF90)
C324	1-137-462-11	FILM 0.018uF 5% 100V	(SE85/SF99)
C331	1-126-933-11	ELECT 100uF 20% 16V	(SE85/SF99)
C332	1-163-021-91	CERAMIC CHIP 0.01uF 10% 50V	(SE85/SF99)
C333	1-163-237-11	CERAMIC CHIP 27PF 5% 50V	
C334	1-163-011-11	CERAMIC CHIP 0.0015uF 10% 50V	(SE85/SF99)
C335	1-137-397-11	FILM 0.047uF 5% 100V	(SE85/SF99)
C340	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
C341	1-124-584-00	ELECT 100uF 20% 10V	
C342	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C346	1-163-021-91	CERAMIC CHIP 0.01uF 10% 50V	
C350	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C352	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C353	1-163-038-91	CERAMIC CHIP 0.1uF 25V	
C357	1-163-009-11	CERAMIC CHIP 0.001uF 10% 50V	
C358	1-163-038-91	CERAMIC CHIP 0.1uF 25V	
C359	1-163-031-11	CERAMIC CHIP 0.01uF 50V	
		< CONNECTOR >	
CN260	1-784-492-11	CONNECTOR, FFC/FPC 13P	
* CN261	1-564-030-00	PIN, CONNECTOR 5P	
CN301	1-506-481-11	PIN, CONNECTOR 2P	
* CN302	1-568-942-11	PIN, CONNECTOR 4P	
* CN341	1-564-027-00	PIN, CONNECTOR 2P	
CN342	1-573-825-11	CONNECTOR, BOARD TO BOARD 11P	
CN343	1-764-867-41	CONNECTOR, BOARD TO BOARD 20P	
		< IC >	
IC260	8-759-564-36	IC LA70011	
IC301	8-759-499-30	IC BA7755AF-E2	
IC340	8-759-486-92	IC LA7256	

Ref. No.	Part No.	Description	Remarks
		< JUMPER RESISTOR >	
JR251	1-216-296-91	SHORT 0	(EXCEPT SF90:VC(SF)/SF90:NP)
JR252	1-216-296-91	SHORT 0 (EXCEPT SF90:VC(SF))	
JR253	1-216-295-91	SHORT 0 (EXCEPT SF90:VC(SF))	
JR260	1-216-296-91	SHORT 0	
JS323	1-216-295-91	SHORT 0	
JS331	1-216-295-91	SHORT 0 (SF90)	
JS332	1-216-295-91	SHORT 0 (SE85)	
		< COIL >	
L270	1-414-940-21	INDUCTOR 100uH	
L271	1-414-939-21	INDUCTOR 68uH (SF90/SF99)	
L272	1-414-940-21	INDUCTOR 100uH (SF90/SF99)	
L322	1-414-940-21	INDUCTOR 100uH	
L331	1-410-687-11	INDUCTOR 1.2mH (SF90/SF99)	
L332	1-414-181-11	INDUCTOR 4.7uH	
L341	1-414-940-21	INDUCTOR 100uH	
		< IC LINK >	
⚠ PS320	1-801-552-21	PROTECTOR, MODUL (250mA)	
⚠ PS331	1-576-319-21	PROTECTOR, MODULE (125mA) (SF90/SF99)	
		< TRANSISTOR >	
Q271	8-729-422-33	TRANSISTOR 2PD601AR-115	
Q272	8-729-422-33	TRANSISTOR 2PD601AR-115 (SF90/SF99)	
Q273	8-729-043-29	TRANSISTOR PDTC144EK-115	(SF90/SF99)
Q274	8-729-422-33	TRANSISTOR 2PD601AR-115 (SF90/SF99)	
Q275	8-729-422-33	TRANSISTOR 2PD601AR-115 (SF90/SF99)	
Q276	8-729-422-33	TRANSISTOR 2PD601AR-115 (SF90/SF99)	
Q277	8-729-216-22	TRANSISTOR 2PB709AR-115 (SF90/SF99)	
Q278	8-729-216-22	TRANSISTOR 2PB709AR-115 (SF90/SF99)	
Q320	8-729-804-41	TRANSISTOR 2SB1122-ST-TD	
Q321	8-729-802-91	TRANSISTOR 2SD879-AA	
Q331	8-729-012-31	TRANSISTOR 2SC4040-TL2-Q (SE85/SF99)	
Q332	8-729-900-51	TRANSISTOR UN2115-QRS(TX)	(SE85/SF99)
		< RESISTOR >	
R270	1-216-041-00	METAL CHIP 470 5% 1/10W	
R271	1-216-041-00	METAL CHIP 470 5% 1/10W	
R272	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
R273	1-216-295-91	SHORT 0	
R274	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	
R276	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	
R277	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R278	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R279	1-216-081-00	METAL CHIP 22K 5% 1/10W	
R280	1-216-079-00	METAL CHIP 18K 5% 1/10W	(SF90/SF99)

Note :	Note :
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remarks
R283	1-216-059-00	METAL CHIP	2.7K	5%	1/10W
R285	1-216-049-91	RES,CHIP	1K	5%	1/10W
R286	1-216-053-00	METAL CHIP	1.5K	5%	1/10W (SF90/SF99)
R287	1-208-771-11	RES,CHIP	360	5%	1/10W (SF90/SF99)
R288	1-216-081-00	METAL CHIP	22K	5%	1/10W (SF90/SF99)
R289	1-216-049-91	RES,CHIP	1K	5%	1/10W (SF90/SF99)
R290	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (SF90/SF99)
R291	1-216-041-00	METAL CHIP	470	5%	1/10W (SF90/SF99)
R292	1-216-033-00	METAL CHIP	220	5%	1/10W (SF90/SF99)
R293	1-216-053-00	METAL CHIP	1.5K	5%	1/10W (SF90/SF99)
R294	1-216-073-00	METAL CHIP	10K	5%	1/10W (SF90/SF99)
R295	1-216-061-00	METAL CHIP	3.3K	5%	1/10W (SF90/SF99)
R296	1-216-061-00	METAL CHIP	3.3K	5%	1/10W (SF90/SF99)
R297	1-216-049-91	RES,CHIP	1K	5%	1/10W (SF90/SF99)
R298	1-216-073-00	METAL CHIP	10K	5%	1/10W (SF90/SF99)
R317	1-216-079-00	METAL CHIP	18K	5%	1/10W (EXCEPT SF90:B(SF))
R320	1-216-081-00	METAL CHIP	22K	5%	1/10W
R321	1-216-017-91	RES,CHIP	47	5%	1/10W (EXCEPT SF90:B(SF))
R322	1-216-063-91	RES,CHIP	3.9K	5%	1/10W (SF90:UX(WF),B(WF),VC(WF),NP(WF),UX(SF),VC(SF),NP(SF),EX)
R322	1-216-067-00	METAL CHIP	5.6K	5%	1/10W (SE85/SF99)
R323	1-217-671-11	METAL CHIP	1	5%	1/10W
R324	1-216-031-00	METAL CHIP	180	5%	1/10W
R332	1-216-083-00	METAL CHIP	27K	5%	1/10W (SE85/SF99)
R333	1-249-394-11	CARBON	12	5%	1/4W F (SE85/SF99)
R334	1-216-035-00	METAL CHIP	270	5%	1/10W (SE85/SF99)
R334	1-216-037-00	METAL CHIP	330	5%	1/10W (SE85)
R336	1-216-296-91	SHORT	0 (SF90)		
		< TRANSFORMER >			
T321	1-431-097-11	TRANSFORMER, BIAS OSCILLATION (SF90)			
		< RESISTOR >			
R335	1-216-073-00	METAL CHIP	10K	5%	1/10W (SF99:EN,NP,B,VC/SE85)
R336	1-216-164-00	RES,CHIP	39	5%	1/8W (SF99:EN,NP,B,VC/SE85)
R337	1-216-164-00	RES,CHIP	39	5%	1/8W (SF99:EN,NP,B,VC/SE85)
R344	1-216-063-91	RES,CHIP	3.9K	5%	1/10W (SF99:EN,NP,B,VC/SF90/SE85)
R345	1-216-057-00	METAL CHIP	2.2K	5%	1/10W (SF99:EN,NP,B,VC/SF90/SE85)

Ref. No.	Part No.	Description			Remarks
R346	1-216-065-91	RES,CHIP	4.7K	5%	1/10W (SF99:EN,NP,B,VC/SF90/SE85)
R347	1-216-065-91	RES,CHIP	4.7K	5%	1/10W (SF99:EN,NP,B,VC/SF90/SE85)
R348	1-216-033-00	METAL CHIP	220	5%	1/10W (SF99:EN,NP,B,VC/SF90/SE85)
		< TRANSFORMER >			
T321	1-431-100-11	TRANSFORMER, BIAS OSCILLATION			(SF99:EN,NP,B,VC/SE85)
T331	1-423-415-11	TRANSFORMER, BIAS OSCILLATION			(SF99:EN,NP,B,VC/SE85)
*	A-6791-918-A	SE-90 BOARD, COMPLETE			(EXCEPT SE85:B/SF90:B(WF),B(SF)/SF99:B)
		***			
*	A-6791-923-A	SE-90 COMPLETE BOARD, COMPLETE			(SF99:B/SF90:B(WF),B(SF)/SE85:B)
		***			
					(Ref.No:3000 Series)
		< CAPACITOR >			
C970	1-163-259-91	CERAMIC CHIP	220PF	5%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C971	1-124-257-00	ELECT	2.2uF	20%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C972	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C973	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C974	1-109-982-11	CERAMIC CHIP	1uF	10%	10V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C975	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C976	1-163-259-91	CERAMIC CHIP	220PF	5%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C977	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C978	1-163-017-00	CERAMIC CHIP	0.0047uF	5%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C979	1-163-121-00	CERAMIC CHIP	150PF	5%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C980	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C981	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C982	1-163-007-11	CERAMIC CHIP	680PF	10%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C983	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C984	1-163-021-91	CERAMIC CHIP	0.01uF	10%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C985	1-163-251-11	CERAMIC CHIP	100PF	5%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C986	1-126-964-11	ELECT	10uF	20%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C987	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C988	1-163-251-11	CERAMIC CHIP	100PF	5%	50V (SF99:B/SF90:B(WF),B(SF)/SE85:B)
C991	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V (SF99:B/SF90:B(WF),B(SF)/SE85:B)

Ref. No.	Part No.	Description	Remarks
C992	1-163-021-91	CERAMIC CHIP 0.01uF 10% 50V	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
C993	1-163-021-91	CERAMIC CHIP 0.01uF 10% 50V	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
C994	1-163-021-91	CERAMIC CHIP 0.01uF 10% 50V	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
C995	1-126-157-11	ELECT 10uF 20% 16V	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
C996	1-163-227-11	CERAMIC CHIP 10PF 0.5PF 50V	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
		< CONNECTOR >	
CN970	1-573-825-11	CONNECTOR, BOARD TO BOARD 11P	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
		< IC >	
IC970	8-759-438-17	IC LA7337	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
		< JUMPER RESISTOR >	
JR970	1-216-295-91	SHORT 0	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
JR971	1-216-296-91	SHORT 0	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
JR972	1-216-296-91	SHORT 0	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
JR973	1-216-295-91	SHORT 0	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
JR974	1-216-295-91	SHORT 0	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
		< COIL >	
L970	1-414-933-21	INDUCTOR 6.8uH	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
L971	1-414-945-21	INDUCTOR 27uH	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
L972	1-414-938-21	INDUCTOR 47uH	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
L973	1-414-938-21	INDUCTOR 47uH	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
L975	1-414-934-21	INDUCTOR 10uH	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
		< TRANSISTOR >	
Q970	8-729-216-22	TRANSISTOR 2PB709AR-115	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
Q972	8-729-043-32	TRANSISTOR PDTA114EK-115	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
Q973	8-729-422-33	TRANSISTOR 2PD601AR-115	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
Q974	8-729-422-33	TRANSISTOR 2PD601AR-115	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
Q975	8-729-043-32	TRANSISTOR PDTA114EK-115	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
Q976	8-729-043-29	TRANSISTOR PDTC144EK-115	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
		< RESISTOR >	
R968	1-216-101-00	METAL CHIP 150K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R969	1-216-069-00	METAL CHIP 6.8K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R970	1-216-085-00	METAL CHIP 33K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R971	1-216-085-00	METAL CHIP 33K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R972	1-216-083-00	METAL CHIP 27K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R973	1-216-105-91	RES,CHIP 220K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R974	1-216-081-00	METAL CHIP 22K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R975	1-216-295-91	SHORT 0	(SF99:B/SF90:B(WF),B(SF))
R976	1-216-059-00	METAL CHIP 2.7K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R977	1-216-089-91	RES,CHIP 47K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF))
R978	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R979	1-216-073-00	METAL CHIP 10K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R980	1-216-097-91	RES,CHIP 100K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R981	1-216-083-00	METAL CHIP 27K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R982	1-216-089-91	RES,CHIP 47K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R983	1-216-067-00	METAL CHIP 5.6K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R985	1-216-041-00	METAL CHIP 470 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R986	1-216-089-91	RES,CHIP 47K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R988	1-216-077-91	RES,CHIP 15K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R989	1-216-049-91	RES,CHIP 1K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R990	1-216-295-91	SHORT 0	(SF99:B/SF90:B(WF),B(SF))
R993	1-216-071-00	METAL CHIP 8.2K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R994	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R995	1-216-073-00	METAL CHIP 10K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R996	1-216-689-11	METAL CHIP 39K 0.5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R997	1-216-073-00	METAL CHIP 10K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R998	1-216-073-00	METAL CHIP 10K 5% 1/10W	(SF99:B/SF90:B(WF),B(SF)/SE85:B)
R999	1-216-295-91	SHORT 0	(SF99:B/SF90:B(WF),B(SF)/SE85:B)

POWER BLOCK

Ref. No.	Part No.	Description	Remarks
⚠	1-468-398-11	POWER BLOCK (SRV879EK) **********************	(Ref.No:4000 Series)
		< CAPACITOR >	
⚠C151	9-980-236-01	ELECT 47uF	400V
C153	1-126-967-11	ELECT 47uF	50V
C154	1-126-960-11	ELECT 1uF	50V
C201	1-126-934-11	ELECT 220uF	16V
C202	1-126-925-11	ELECT 470uF	10V
C203	1-126-947-11	ELECT 47uF	35V
C204	1-126-933-11	ELECT 100uF	16V
C205	1-126-965-11	ELECT 22uF	50V
C206	1-126-947-11	ELECT 47uF	35V
C207	1-126-934-11	ELECT 220uF	16V
C208	1-126-925-11	ELECT 470uF	10V
C251	1-126-967-11	ELECT 47uF	50V
C252	1-124-534-11	ELECT 680uF	16V
C253	1-124-567-11	ELECT 1200uF	10V
C254	1-126-967-11	ELECT 47uF	50V
C255	1-126-925-11	ELECT 470uF	10V
C301	1-126-969-11	ELECT 220uF	50V
C302	1-126-969-11	ELECT 22uF	50V
C303	1-126-965-11	ELECT 22uF	50V
		< DIODE >	
D101	9-880-927-01	DIODE IN4005	
D102	9-880-927-01	DIODE IN4005	
D103	9-880-927-01	DIODE IN4005	
D104	9-880-927-01	DIODE IN4005	
D151	8-719-077-06	DIODE RB721Q-40	
D152	9-880-932-01	DIODE EG01C	
D153	8-719-911-19	DIODE ISS119	
D154	8-719-077-06	DIODE RB721Q-40	
D155	8-719-061-02	DIODE PR1003	
D156	9-880-990-01	DIODE IN4005	
D158	9-880-991-01	DIODE MA4270	
D159	8-719-922-10	DIODE MTZJ22	
D203	8-719-921-42	DIODE MTZJ5.1	
D204	8-719-911-19	DIODE ISS119	
D205	8-719-911-19	DIODE ISS119	
D251	8-719-061-02	DIODE PR1003	
D252	8-719-510-73	DIODE S3L20U	
D253	8-719-027-20	DIODE D3S4M	
D254	8-719-061-02	DIODE PR1003	
D255	8-719-061-02	DIODE PR1003	
D301	8-719-510-73	DIODE S3L20U	
D302	8-719-018-83	DIODE D2S4M	
D303	8-719-034-92	DIODE MA4180	
D304	8-719-018-83	DIODE D2S4M	
D305	8-719-911-19	DIODE ISS119	
D306	8-719-911-19	DIODE ISS119	
D307	8-719-018-83	DIODE D2S4M	
		< FUSE >	
⚠F101	1-532-388-31	FUSE, TIME LUG T2A/250V	
		< IC >	
⚠IC151	9-980-235-01	IC AN8028	
IC201	8-759-438-18	IC PQ12RD08	
IC251	8-759-420-19	IC AN1431T	
		< IC LINK >	
⚠PS201	1-533-592-21	LINK, IC 1.6A	
⚠PS202	1-533-593-21	LINK, IC 2A	
⚠PS251	1-533-588-21	LINK, IC 750mA	
		< PHOTOCOUPLER >	
⚠PC151	9-903-923-01	PHOTOCOUPLER ON3171	
		< TRANSISTOR >	
Q151	9-880-931-01	FET FS2KM-16	
Q201	8-729-040-88	TRANSISTOR 2SB1240	
Q204	9-880-929-01	TRANSISTOR 2SC1740	
Q205	8-729-018-99	TRANSISTOR 2SD2394	
Q206	8-729-119-79	TRANSISTOR 2SC2785	
Q207	8-729-049-82	TRANSISTOR 2SD1863	
Q208	8-729-040-21	TRANSISTOR 2SD1862	
Q209	9-880-930-01	TRANSISTOR UN4111	
Q210	9-880-930-01	TRANSISTOR UN4111	
Q211	8-729-422-72	TRANSISTOR UN4211	
Q301	8-729-018-99	TRANSISTOR 2SD2394	
Q302	9-880-929-01	TRANSISTOR 2SD1740	
Q303	8-729-018-99	TRANSISTOR 2SD2394	
Q304	8-729-119-79	TRANSISTOR 2SC2785	
Q305	8-729-040-88	TRANSISTOR 2SB1240	
Q306	9-880-929-01	TRANSISTOR 2SD1740	
Q307	8-729-231-11	TRANSISTOR 2SA1015	
		< RESISTOR >	
R251	9-880-993-01	CARBON 10	1/4W
		< VARISTOR >	
⚠Z101	9-880-928-01	VARISTOR ERZV10D751	
		MISCELLANEOUS *************	
16	1-762-844-31	SWITCH, ROTARY	
26	1-418-389-11	SWITCH BLOCK, CONTROL	(SF90:UX(SF),VC(SF),NP(SF),EX)
26	1-418-389-21	SWITCH BLOCK, CONTROL (SF90:B(SF))	
26	1-418-389-31	SWITCH BLOCK, CONTROL	(SF99:UX,EN,NP,VC)
26	1-418-389-41	SWITCH BLOCK, CONTROL (SF99:B)	
26	1-418-389-51	SWITCH BLOCK, CONTROL	(SF90:UX(WF),VC(WF),NP(WF))
26	1-418-389-61	SWITCH BLOCK, CONTROL (SF90:B(WF))	
52	1-779-725-11	CONNECTOR, BOARD TO BOARD 5P	
⚠57	1-782-012-11	CORD, POWER (SE85)	
⚠57	1-783-931-11	CORD, POWER (SF99/SF90)	

Note :	**Note :**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remarks
⚠60	1-468-398-11	POWER BLOCK	
704	1-500-144-11	HEAD, FE	
768	1-759-373-22	DRUM ASSY (DZH-86A-R) (SE85:NP,VC,UX/SF90:NP,VC,UX,EX/SF99:EN,NP,UX,VC)	
768	1-759-557-22	DRUM ASSY (DZH-98A-R) (SE85:B/SF90:B/SF99:B)	
831	1-766-723-21	CONNECTOR, BOARD TO BOARD 3P	
834	1-666-524-11	PWB, CA-55	
838	1-541-309-11	MOTOR, L (RF-370C)	
M902	1-698-971-11	MOTOR, DC (CAPSTAN)	
M903	X-3947-577-1	MOTOR ASSY, CAM	

ACCESSORIES
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Ref. No.	Part No.	Description	Remarks
	1-696-593-11	CORD, CONNECTION (PAL) (SF99/SF90:UX(WF),B(WF),VC(WF), UX(SF),B(SF),VC(SF),EX/SE85)	
	1-696-861-11	CORD, CONNECTION (SF90:NP(WF),NP(SF))	
	1-696-593-11	CORD, CONNECTION (PAL) (SF99/SF90:UX(WF),B(WF),VC(WF), UX(SF),B(SF),VC(SF),EX/SE85)	
	1-696-861-11	CORD, CONNECTION (SF90:NP(WF),NP(SF))	
	3-867-077-11	INSTRUCTION MANUAL (SF90:VC(WF),NP(WF),VC(SF),NP(SF)/SE85:VC)	
	3-867-077-21	INSTRUCTION MANUAL (SF90:B(WF),VC(WF),NP(WF),B(SF), VC(SF),NP(SF)/SE85:B,VC)	
	3-867-077-31	INSTRUCTION MANUAL (SF90:VC(WF),VC(SF)/SE85:VC)	
	3-867-077-41	INSTRUCTION MANUAL (SF90:VC(WF),NP(WF),VC(SF),NP(SF))	
	3-867-082-11	INSTRUCTION MANUAL (SF90:NP(WF),NP(SF)/SE85:NP)	
	3-867-082-21	INSTRUCTION MANUAL (SF90:NP(WF),NP(SF)/SE85:NP)	
	3-867-082-31	INSTRUCTION MANUAL (SF90:NP(WF),NP(SF))	
	3-867-082-41	INSTRUCTION MANUAL (SF90:NP(WF),NP(SF))	
	3-867-082-51	INSTRUCTION MANUAL (SF90:NP(WF),NP(SF))	
	3-867-087-11	INSTRUCTION MANUAL (SF90:UX(WF),UX(SF),EX/SE85:UX)	
	3-867-587-11	MANUAL, INSTRUCTION (SF99:UX)	
	3-867-590-11	MANUAL, INSTRUCTION (SF99:NP,VC)	
	3-867-590-21	MANUAL, INSTRUCTION (SF99:NP,VC)	
	3-867-590-31	MANUAL, INSTRUCTION (SF99:VC)	
	3-867-590-41	MANUAL, INSTRUCTION (SF99:NP,VC)	
	3-867-592-11	MANUAL, INSTRUCTION (SF99:B)	
	3-867-594-11	MANUAL, INSTRUCTION (SF99:NP)	
	3-867-594-21	MANUAL, INSTRUCTION (SF99:NP)	
	3-867-594-31	MANUAL, INSTRUCTION (SF99:NP)	
	3-867-594-41	MANUAL, INSTRUCTION (SF99:NP)	
	3-867-594-51	MANUAL, INSTRUCTION (SF99:NP)	
	3-867-596-11	MANUAL, INSTRUCTION (SF99:EN)	
	3-867-596-21	MANUAL, INSTRUCTION (SF99:EN)	
	3-867-596-31	MANUAL, INSTRUCTION (SF99:EN)	
	3-867-596-41	MANUAL, INSTRUCTION (SF99:EN)	
	3-867-596-51	MANUAL, INSTRUCTION (SF99:EN)	
	3-867-596-61	MANUAL, INSTRUCTION (SF99:EN)	

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HARDWARE LIST
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Ref. No.	Part No.	Description	Remarks
#1	7-685-648-79	SCREW +BVTP 3X12 TYPE2	
#701	7-685-646-79	SCREW +BVTP 3X8 TYPE2	
#702	7-682-147-01	SCREW +P 3X6	
#703	7-685-133-19	SCREW (DIA. 2.6) (IT3B)	

Note : The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	**Note :** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Sony Corporation
Home Video Company

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